CFAES

continuum

News from the College of Food, Agricultural, and Environmental Sciences

Winter 2017–18

THREE FOR THE FUTURE

MATTHEW MARX

They are future leaders of agriculture. And these three scholars are already making an impact, thanks to the generosity of those who give to The Ohio State University College of Food, Agricultural, and Environmental Sciences. Scholarships have helped Maria Fredericks, Jazmine Mincy and Matthew D. Teegarden get involved, represent CFAES and Ohio State, achieve academic excellence, and see the world.

FROM LEFT, JAZMINE MINCY, MARIA FREDERICKS AND MATTHEW D. TEEGARDEN REPRESENT THE APPROXIMATELY 1,200 CFAES SCHOLARSHIP RECIPIENTS THIS YEAR.

MARIA FREDERICKS

Maria Fredericks is majoring in environmental policy and decision making, and specializing in environmental and social justice.

She is currently conducting undergraduate research led by Assistant Professor Jeffrey Jacquet in the CFAES School of Environment and Natural Resources. The focus is on community perception and response to railway transport of fossil fuels.

The junior from Long Island is also founder of "Renew OSU," an activist group committed to persuading the university to divest from using fossil fuels.

Fredericks is surprised about how quickly she has observed climate change, noting that its impact will be disproportionate to those with the greatest financial need and lowest income, she said.

"People have lost their homes completely due to climate change," she said.

Columbus was the furthest west that she had ever traveled at the time of her college visit. She came to Ohio State seeking the big college experience. "As soon as I set foot on campus, I fell in love," she said. "I knew this was the school for me."

An award from the Office of Diversity and Inclusion's Education Abroad Scholarship Fund allowed Fredericks to visit Barcelona, Spain, for six weeks. "Thanks to the donors I was able to reduce my costs."

Fredericks is also a recipient of **The Barnebey Family Scholarship Fund (#600329)**, and she is a Morrill scholar, which is awarded by the university to students of diverse background. She is also a residence advisor in the university's Fechko House.

Fredericks said she has "a large sense of gratitude for Ohio State to have one of the largest diversity programs in the nation. It is amazing with networking."

After she completes her undergraduate degree, Fredericks is considering obtaining a Juris Doctor and a master's degree. 0

JAZMINE MINCY

A graduating senior from Cincinnati, Ohio, Jazmine Mincy has made it her mission to work with youth and introduce agriculture to people with nontraditional agricultural backgrounds.

She has served as Region V national vice president for Minorities in Agriculture, Natural Resources, and Related Sciences and is president of the Ohio State chapter of that academic and professional organization.

"To have that opportunity is rare, and I wouldn't be able to have it without the support I received here," she said.

Mincy graduates in December 2017 with a Bachelor of Science in Animal Sciences. Meeting Temple Grandin after a lecture and taking study abroad trips to Spain and Costa Rica are her most memorable undergraduate experiences.

"I got to understand the culture and understand how people there perceive the agricultural industry," she said of the trips, for which she had received **The Mount Family Study Abroad Scholarship Fund (#645065)** and the **Pat and Bobby Moser Family Study Abroad Scholarship Fund (#645044)**.

Mincy plans to teach high school and get a master's degree. She is also considering joining the Peace Corps.

"A lot of people have a stigma about who belongs in the industry of agriculture. The professors and staff help break that," Mincy said. "The college itself has developed a culture that makes students welcome in the university."

"When you can go into the office and the assistant dean recognizes you, or when the dean invites you to dinner, that makes you feel like you are home," said Mincy. 0

> "By having the scholarships, it has freed up time to explore other things. It shows you are doing something right. They are incredibly valuable. Thank you."

MATTHEW D. TEEGARDEN, MS

Named Outstanding Graduate Student for 2017 at The Ohio State University, Matthew D. Teegarden is currently a doctoral candidate in the CFAES Department of Food Science and Technology.

He is president of the Institute of Food Technologists Student Association, an international organization that has more than 3,000 members. He also recently visited South Africa.

As the **Lisa and Dan Wampler Endowed Fellow for Food and Health Research**, Teegarden is researching functional foods, specifically berries, and their potential positive impact on oral cancer outcomes.

"We have a long history of research in berries at Ohio State, specifically black raspberries. It is a good food to explore," he said. "The fellowship allows me to be innovative and come up with new ideas."

The Cincinnati, Ohio, native received additional scholarship assistance as both an undergraduate and graduate student.

"By having the scholarships, it has freed up time to explore other things," he said. "It shows you are doing something right. They are incredibly valuable. Thank you."

He also is a founding member of the student food-science-communication group "Citation Needed" and a member of a similar group called "Don't Eat the Pseudoscience."

After receiving his degree, Teegarden plans to pursue a career advocating for the science of and conducting research in the food industry. 0

A LASTING **GIFT**

MATTHEW MARX

A Jamestown, Ohio, farm couple is helping Ohio State ATI students through a CFAES endowed fund established to honor their late son, Ronald Guess.

TOP, CODY MYERS.

BOTTOM LEFT, FROM LEFT, CATHY PERSINGER, MARTHA RECTOR, MARK GUESS, CONNIE GUESS AND TERESA MOORE.

BOTTOM RIGHT, FROM LEFT, ROCK PERSINGER, RONALD GUESS, CONNIE GUESS AND MARK GUESS IN 2006.

Cody Myers has plans: Obtain a two-year associate degree from Ohio State ATI in Wooster, Ohio, finish his Bachelor of Science in Agriscience Education at Ohio State's Columbus campus, and then, hopefully, serve as a high school instructor and a National FFA Organization advisor.

Those plans are becoming reality, thanks in part to **The Guess Family Endowed Scholarship Fund in Honor of Ronald Guess (#642829)**.

A sophomore from Jamestown in Greene County, Ohio, Myers can renew his scholarship through his undergraduate career for up to eight semesters.

"It helps me financially greatly," he said. "College is expensive and it really helps. Just knowing that someone cares about your education and wants you to get your degree. Some students solely depend on scholarships like this. Thank you."

One of three scholarship fund recipients, Myers knew some Guess family members while attending Greenview High School, he said.

In memory of their son, who died in 2014 at age 56, Mark and Connie Guess set up the fund. The fund, set up in perpetuity, allows ATI students to keep their scholarships through their entire college careers, even if they transfer majors. Preference for the awards is given to students from Clinton and Greene County, Ohio.

"It just seemed like we needed to do it," Mr. Guess said.

Donate to The Guess Family Endowed Scholarship Fund in Honor of Ronald Guess at go.osu.edu/ronaldguess.

CNH Global Gifts in Kind

CFAES agricultural engineering students are training and conducting research in outdoor educational labs statewide using the latest field equipment, thanks to gifts in kind from CNH Global, its dealer network—Evolution Ag, Franklin Equipment and Wellington Implement—and other CFAES industry partners. In addition, gifts of tractors, disc rippers and other equipment make it possible for field demonstrations on both the Ohio State Columbus and Wooster campuses as well as at Farm Science Review each year at the Molly Caren Agricultural Center in London, Ohio. Applying nitrogen, planting corn and soybeans, harvesting, spraying, bailing, and working with tillage are among the needs met because of gifts that are given outright to the college or rented at no cost. With these gifts, students have access to state-of-the-art equipment and are prepared to enter the workforce. Researchers are also able to evaluate the impact a variety of field management practices can have on crop yields. MATTHEW MARX

Emergency response

Sooner or later, everyone needs a rescue. Often that crisis occurs during college. With that in mind, Col. David and Dr. Nancy Bull wanted to create a unique emergency discretionary fund that the dean could use as needed to help CFAES students with an unexpected, severe financial burden.

The Columbia, Connecticut, couple is establishing the **Nancy H. and David E. Bull Student Emergency Financial Assistance Fund (#483184)** as a pending endowment fund for the college.

"Unfortunately, there are far too many instances where many good students, for whatever reason, run short of funds to be able to finish," Col. Bull said. "We thought it was a pretty good idea to put together a fund available only to the dean to make that decision."

No other CFAES fund exists where the dean has the discretion to help a student with a sudden crisis.

In addition, the couple made estate gifts to benefit **The Bull Family Endowment Fund for Extension Outreach (#640944)**, the **Bull Family Study Abroad Scholarship Fund (#640945)** and the **4-H in the Classroom, Greene County Fund (#314780)**.

"Our family has valued the leverage of Extension for generations and the change it can make in people's lives," Dr. Bull said. "It's all about 'how do we make the world a better place?' We hope our support will so contribute." MATTHEW MARX

Unfortunately, there are far too many instances where many good students, for whatever reason, run short of funds to be able to finish.

4-H HELPS HEROES AT **OHIO MILITARY KIDS CAMP**

MATTHEW MARX

FROM LEFT, MIGUEL, GABRIEL AND AURORA SANTIAGO-FLORES AT VIP DAY LAST SUMMER.

Through group activities and simple friendship, Ohio Military Kids Camp helps youth whose parents are deployed cope with feelings of stress, isolation and hardship.

Siblings Aurora and Miguel Santiago-Flores have been coming to Ohio Military Kids Camp for seven years. Both started as campers and returned as camp counselors.

"We're family. We all have each other's back," said Aurora, 18, who attends Ohio University.

In addition, their younger brother, Gabriel Santiago-Flores, 13, has been a camper for five years.

Their father is a sergeant first class in the U.S. Army. They share a common bond with everyone at the camp, which is for children whose families serve in the military.

"It gives them a chance to meet other children of military families and lets them know they are not alone," said Kayla Oberstadt, 4-H program manager of Ohio Military Kids and older youth leadership development. "They get to see the impact of what military service means and the support they have from so many people."

It's an educational experience as well. On VIP Day last summer, campers and guests watched a demonstration of a Navy SEAL operation overseas, complete with drones and bomb-sniffing dogs.

"They showed us a lot about the Navy SEAL world and the military world," Gabriel said. "We learned about other cultures."

Campers tend to return as counselors and provide support to younger teens and children, said Miguel, 16. "We stick together through thick and thin. ... Everyone sees the mission and what they go through to keep the military safe and keep the world safe."

A week of swimming in Lake Erie and being around water every day is calming and fun, said Kat France, 10, whose father is a major in the Army National Guard.

"This is something I have been looking forward to since the day I left last year," she said. "It's amazing here. It feels like my home away from home."

"It's a little bit better because I have this amazing lake and a great view." **0**

Help Ohio 4-H partner with the U.S. military on youth development projects by giving to the Ohio Military Kids 4-H Fund (#311984) at go.osu.edu/OMK4H.

EXPANDING **OPPORTUNITIES** IN ANIMAL SCIENCES

Ohio State ATI students will be able to learn more about meat science and will be able to obtain food-safety certification, thanks in part to a recent gift from Certified Angus Beef LLC.

The newly created **Wooster Campus Meat Science Faculty Support Fund (#315572)** has allowed Assistant Professor Daniel Clark to help bring a meat science class to ATI and has allowed him to prepare to help teach an industry-requested, food-safety-certification course.

Clark is co-teaching Introduction to Meat Science with Assistant Professor Lyda Garcia, both of the CFAES Department of Animal Sciences. Students at both the Columbus and Wooster campuses will take the course as a distance-learning hybrid, with instructors trading off live, in-person lectures and video conferencing, Clark said.

Introduction to Meat Science had not been offered previously at ATI, Clark said, but it is now planned for spring semester 2018.

"We're trying to build the Meat Science program while students are here, but also for when they transfer," Clark said. "It makes it easier for them to get into a meat science minor—if not a meat science major—after they transfer to Columbus."

In addition, Clark is preparing to teach a food-safety course for Hazard Analysis Critical Control Point (HACCP) certification. The plan is to offer the course beginning in summer 2018.

"The food industry in Northeast Ohio is growing. Every plant has to have someone who is HACCP-certified for food-safety regulations. There are opportunities in Columbus to get certified. We want to offer similar opportunities for the Northeast Ohio region," he said.

Local industry stakeholders have identified having employees with HACCP certification as a need, which will create job opportunities for those who have had the training, Clark said.

"A lot of our ATI students want to stay local. By increasing opportunities at ATI, it allows them to take on something like a food-safety job and allows them to stay closer to home," he said.

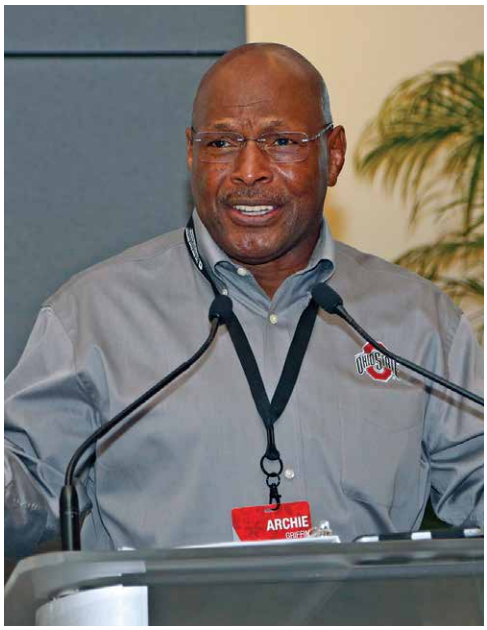
In addition to meat science, Clark's research also focuses on the study of muscle-biology characteristics and the improvement of meat quality after slaughter. **MATTHEW MARX**

ASSISTANT PROFESSOR DANIEL CLARK TEACHES INTRODUCTION TO MEAT SCIENCE AT OHIO STATE ATI.

OVERHEARD

Homecoming 2017

Ohio State cheerleaders fired up the crowd at the CFAES Fallfest Tailgate on October 7. **Larry "Buckeyeman" Lokai** was among the 14 alumni celebrating their class's 50th anniversary. The pregame tailgate drew 340 guests—including alumni and donors, friends and family, and faculty and staff—to a huge tent on the Plumb Hall lawn for fantastic food, drinks and family fun prior to the Buckeyes' 62-14 shellacking of the University of Maryland Terrapins. One day earlier, Dean Cathann A. Kress delivered her first State of the College address at the Nationwide & Ohio Farm Bureau 4-H Center. Watch it on the CFAES YouTube channel at **youtu.be/rr25kHTQyyY**.



NO ONE BETTER THAN COLLEGE FOOTBALL'S ONLY TWO-TIME HEISMAN TROPHY WINNER TO DISCUSS PERSEVERANCE, CONFIDENCE AND KINDNESS. KEYNOTE SPEAKER **ARCHIE GRIFFIN** ADDRESSED 109 GUESTS DURING THE CFAES DINNER ON JULY 13, 2017, IN THE OHIO STADIUM.

SEVERAL MEMBERS OF AN AG LEADERS DELEGATION FROM THE EASTERN CAPE PROVINCE OF SOUTH AFRICA STAND WITH CFAES DEAN CATHANN A. KRESS AT THE CELEBRATION OF OHIO AGRICULTURE LUNCH ON SEPTEMBER 19 DURING THE 2017 FARM SCIENCE REVIEW. FROM LEFT ARE **THOZAMILE GWANYA**, **NOLITHA NKOMANA**, **DEAN KRESS**, **FEZEKA MKHILE-STEMELE** AND DELEGATION LEADER **LUMKILE NGADA**. IN ALL, 275 PEOPLE ATTENDED THE LUNCH AT THE MOLLY CAREN AGRICULTURAL CENTER IN LONDON, OHIO.

ENJOYING THE PREGAME FESTIVITIES AT FALLFEST WERE, FROM LEFT, **MARSHALL GRADY**, **DEBRA WOOLEVER** AND **GREG GRADY**.

CFAES AMBASSADORS, FROM LEFT, **WYATT JONES**, **MARY BUEHLER**, **MATTHEW KLOPFENSTEIN**, **MINDI BROOKHART** AND **MANDY TAYLOR** JOINED 350 GUESTS AT THE CELEBRATION OF CFAES LUNCH ON SEPTEMBER 21 DURING THE 2017 FARM SCIENCE REVIEW.

Updates

Thirty-five Ohio counties shared $20,000 for youth programming after Ohio 4-H placed first in the national Raise Your Hand competition.

More than 11,800 Ohio 4-H alumni participated in the initiative by visiting **4-h.org/raise-your-hand** to log themselves as alumni. The resulting prize money was awarded among the 35 Ohio counties with the highest participation.

The goal of the initiative was to mobilize alumni across the country, helping to bring 4-H to 10 million youth by 2025.

"Ohio is the birthplace of 4-H, and ever since it began, we have always had a strong core of 4-H alumni who step forward to be our supporters, whether it be a 4-H volunteer for a local 4-H club, a donor or an active promoter of 4-H," said Thomas Archer, state 4-H leader.

"We think any youth can benefit from the 4-H experience," Archer said. "Having so many 4-H alumni self-identify to help promote Ohio 4-H in the next few years will greatly increase the potential of engaging even more youth in Ohio 4-H."

Ohio State's second annual **Day of Giving** begins February 14, 2018, and runs for 24 hours. Last year, 375 CFAES donors gave $32,440 during the inaugural event.

Save the Date! The annual **CFAES Alumni Awards Luncheon** is March 3, 2018, at the Fawcett Event Center, 2400 Olentangy River Road, Columbus, Ohio. For more information, visit **go.osu.edu/cfaesawards**.

The 2018 **Ohio State Spring Game** is April 18. Watch for details about the university's game-day activities at **go.osu.edu/CFAESConnect**. Go Bucks!

YOUR GENEROSITY BY THE NUMBERS

For the fourth consecutive year, CFAES broke its own fundraising record, and we have you to thank. We're grateful for the amazing support from CFAES alumni, friends and industry partners. Because of your help, CFAES continues to conduct ground-breaking research, engage in community outreach and prepare the agricultural leaders of tomorrow. For more information, contact the CFAES Office of Advancement at 614-292-0473 or faesdevcom@osu.edu.

CFAES PRIVATE SUPPORT IN FISCAL YEAR 2017

(JULY 1, 2016 THROUGH JUNE 30, 2017)

FISCAL YEAR	2017	2016
Cash and Securities	$5,319,949	$4,948,447
Real Estate	----------	$1,250,000
Gifts in Kind	$2,803,517	$2,340,660
Pledges	$8,663,414	$5,588,167
Revocable Planned Gifts	$2,341,633	$2,809,080
Philanthropic Grants	$10,504,211	$11,006,343
Total Support	**$29,632,724**	**$27,942,697**

» *To view Dean Kress' State of the College address, visit* ***youtu.be/rr25kHTQyyY****.*

FOCUS AND IDENTITY

Cathann A. Kress, PhD
Vice President for Agricultural Administration and Dean, College of Food, Agricultural, and Environmental Sciences

@cathannkress

Imagine if you will, a world in which by simply eating the right combination of delicious foods we could end cancer. Or a world in which a lowly dandelion could be harvested to create high-quality rubber. Imagine a world where the single deadliest animal to humans—the mosquito, which transmits dengue, malaria and Zika—is neutralized and we don't use insecticides but instead, we short-circuit its own systems, leaving honeybees and pollinators untouched. Or a world in which we no longer worry about antibiotic resistance because we use compounds called small molecules to combat bacteria.

Or a world where soil structure and microbes help us manage specialized agriculture, resulting in less need of irrigation, fertilizers and herbicides.

I no longer imagine these things because I'm watching our faculty, students and staff develop them right now. With the support of our alumni, donors and partners, we are investing time and resources to focus on today's grand challenges—those challenges that will take our collective knowledge, skills and compassion to address.

This is what we do. This is who we are. CFAES focuses on sustainability through production efficiency and technologies; food security and food safety; economic and policy analysis; and preservation of the environment, ecosystems and water quality. We are developing biomass-based advanced energy technologies and value-added biobased products. We strive to ensure human, animal and environmental health, and we seek to prepare our future leaders and scientists.

We have numerous strengths in our college: the breadth and depth of the talent of our students, faculty and staff; our strong partnerships; and our numerous relevant specialties. Our real strength, however, is our mission—unchanging, fundamental and of paramount importance—we sustain life.

» *HEAL MAPPS is working to change lives. Read more about the project at* ***go.osu.edu/BeSZ****.*

Your soybean bodyguards

CFAES researchers have long been creating varieties of soybeans that can fend off the most destructive soybean disease in Ohio: Phytophthora root and stem rot. However, the pathogen that causes this disease evolves, so more resistant varieties of soybeans are always needed. Living in soil, the organism that causes Phytophthora root and stem rot attacks a plant's roots first, then moves through the stem, killing off soybean plants across Ohio every year. Anne Dorrance, a CFAES soybean pathologist, and Leah McHale, a CFAES soybean breeder and geneticist, try to stay one step ahead of the pathogen. Dorrance monitors the pathogen as it changes, and she and McHale work to identify the combination of genes offering the most resistance to Phytophthora. Knowing the gene combination that offers resistance to Phytophthora and other soybean diseases, McHale can then try to create it in a new variety of soybean seed. "We've done a lot to get to this point," McHale said. **ALAYNA DEMARTINI**

Katrina Cornish receives the A.E. Thompson Career Achievement Award

The Association for the Advancement of Industrial Crops awarded its highest honor, the A.E. Thompson Career Achievement Award, to Katrina Cornish. Cornish is the Ohio Research Scholar and Endowed Chair in Bioemergent Materials at CFAES and is director of research for the Program of Excellence in Natural Rubber Alternatives, a private/public consortium. She is also a Fellow of the National Academy of Inventors and of the American Association for the Advancement of Science. She is a leading global expert on sustainable alternate rubber production, processing and products, from circumallergenic latex to liquid biofuels.

"I am very honored to receive this rare and prestigious award, which really recognizes the efforts of many of my team and collaborators," said Cornish. "I hope that this will inspire others to commit to team-based interdisciplinary alternate rubber crop research and development to address growing global shortfalls of natural rubber." **CHIP TUSON**

CFAES PROJECT **'MAPPS'** FOOD INSECURITY, HUNGER

Sidewalks and bus stops determine whether some families in the Meadow Ridge neighborhood of West Chester, Ohio, have access to fresh foods.

"My daughter eats a lot of fresh fruits and vegetables all the time, but when we didn't have my car, she had to eat more processed food like ramen noodles, SpaghettiOs," said a resident of the southwestern Ohio suburban township. "I had a friend who would take me to the store, but she could only take me once every two weeks. So, you know, the fresh items, they don't keep very long."

Sidewalks and bus stops are just two of the barriers that some residents identified as limitations to their access of healthy foods. By using maps and photos of community features, Ohio State University Extension professionals are working with these community members to address issues related to food access, healthy eating and physical activity.

The goal is to develop a community-led task force to address what supports or inhibits healthy eating and community well-being.

Through the Healthy Eating and Active Living Mapping Attributes using Participatory Photographic Surveys (HEAL MAPPS) program, community members partner with Extension professionals to create an action plan based on conversations around maps and photos of community features that support or inhibit healthy behaviors, said Dan Remley, project leader and field specialist in food, nutrition and wellness for OSU Extension.

The goal is to develop a community-led task force to address what supports or inhibits healthy eating and community well-being.

In West Chester, the project has resulted in talks to implement some of the project's recommendations, including increasing bus stops and building more sidewalks in affected areas, said Karima Samadi, project coordinator for HEAL MAPPS.

"Some communities aren't aware that food access or food insecurity is an issue," she said. "HEAL MAPPS brings awareness to the issue from the participant's perspective to get the conversation started to solve the issues."

HEAL MAPPS, which originated at Oregon State University, has been implemented in Ironton, West Chester and Xenia, Ohio, so far. The goal, Remley said, is to offer this kind of research and engagement across Ohio to help change policies, systems and environments. **TRACY TURNER**

» *Additional information is available at* ***go.osu.edu/B9X5****.*

GROWING EXPERTS TO **STOP HUNGER**

✍ ALAYNA DEMARTINI

Since 2011, a $25.5 million grant from the U.S. Agency for International Development has funded graduate degrees for 135 Tanzanians, including 21 who have been educated at CFAES.

In Tanzania, more than three-fourths of the labor force works in agriculture, many of them farmers with 5 or fewer acres, who weed by hand and strap pesticide tanks to their backs to keep the many pests from devouring their crops. Dirt roads far outnumber the paved ones, and few own a car to bring what they harvest to the larger markets where they could earn more.

Working in the fields of Tanzania and in the classrooms of CFAES, faculty have helped Tanzanians increase their agricultural productivity and reduce food insecurity in their country. For seven years, a CFAES faculty member, David Kraybill, lived in Tanzania and worked on-site with farmers and faculty. Along with collaborating on research with Tanzanian scientists, Kraybill and others have trained Tanzanians who play key roles in educating agriculture students and small farmers.

"It's not sustainable for me to say 'I'm an expert' and go there for two weeks, train them and then come back," said Mark Erbaugh, director of CFAES International Programs in Agriculture. "We're working with their scientists and students to build their capacity to get the job done." ■

DEOGRACIOUS P. MASSAWE RESEARCHES VIRUSES KILLING CORNFIELDS ACROSS EAST AFRICA.

Stalking maize lethal necrosis

Deogracious P. Massawe knows farmers who have lost row after row of corn to a disease ravaging cornfields across northern Tanzania, a country where maize dominates the diet. He has stood in cornfields, peeling back husks, only to find dry and beige ears, or plants that never even formed a cob.

As part of his CFAES graduate studies, Massawe determines the genetic makeup of the viruses causing the disease killing swaths of cornfields in his native country: maize lethal necrosis. First reported in Kenya in 2011, maize lethal necrosis has spread through East Africa, contributing to the region's malnutrition rate.

"We have to make sure we manage this disease so that it doesn't spread to other regions. We have to contain this disease," Massawe said.

For his doctoral research in the CFAES Department of Plant Pathology, Massawe tracks the prevalence of the viruses causing maize lethal necrosis across Tanzania. Besides analyzing the genetic makeup of those viruses, he also identifies previously undiagnosed viruses that pose a threat to corn, and in turn, to Tanzanian small farmers' already limited incomes. Knowing the genetic makeup of hazardous viruses, Massawe and others can help develop tools to diagnose the viruses and create new varieties of corn able to resist them. ■

Hunger amid plenty

In Rita Mirondo's native country of Tanzania, where a little more than one-third of the population struggles with malnutrition, fruits and vegetables rot in fields every year. Very few juicing or canning plants exist, so many go without an adequate supply of nutritious food.

Mirondo came to Ohio State in 2012 to pursue a doctorate degree and gain the research skills needed to help her country's ability to process and add value to the crops grown that would otherwise rot. Her CFAES research focused on improving the quality and safety of producing mango puree and tomato juice, keeping the peels on the two fruits. Besides adding antioxidants, keeping the peels on could potentially lower the cost of processing the fruits.

"Taking off the peel means we're taking off nutrients," Mirondo said. "I want to look at ways in which we can use the parts we consider waste—the peel, the roots, the leaves—to enrich the product."

As a graduate student in the CFAES Department of Food Science and Technology, Mirondo had access to modern labs and food processing techniques that made her research possible. She learned various ways to pasteurize juices, which are critical skills in Tanzania, where farmers sometimes inadvertently produce bottled juices high in bacteria.

Mirondo hopes to help improve the food processing industry in Tanzania by increasing the country's potential to process more of its fruits, vegetables and other crops so that fewer will rot and more will be eaten year-round. O

RITA MIRONDO RECEIVED HER PHD FROM CFAES, WHERE HER RESEARCH FOCUS WAS ON THE PROCESSING OF FRUITS AND VEGETABLES.

Ohio State ATI student transformed by Ghana experience

Gage Smith of Racine, Ohio, will soon transition to the Columbus campus to complete a bachelor's degree in community leadership with a community and Extension education specialization. Through ATI's study abroad program, Smith traveled to Ghana twice, which had a profound impact on him.

Before his first trip, Smith said, "About the only thing I knew about Africa was that there were cool animals roaming the grasslands. We never think of people."

Instilled with a love for the people and culture of Ghana after his first trip, Smith decided to intern there last summer. After earning a Gilman Scholarship for Study Abroad from the U.S. Department of State, Smith helped establish two 4-H groups and worked with farmers on hydroponics projects.

"When you sign up for a service trip, you think you're going to be the one who will save the world. And I got put in my place and learned I will not be the one—but I can contribute to a community that will save the world," said Smith. **FRANCES WHITED**

» *Follow Stone Lab on Twitter and Instagram at* ***@stonelab*** *and on Facebook at* ***facebook.com/stonelaboratory****.*

STONE LAB'S **STUDENT LAUNCH**

✍ KURT KNEBUSCH

*Last summer, CFAES students Stacey Clay, Maddy Lambrix and Andy Oppliger participated in The Ohio State University Stone Laboratory's Research Experience for Undergraduates (REU) Scholarship Program (****go.osu.edu/StoneLabREU****). During the five-week program, the students did real research, both in the field and in the water, with faculty mentors at Stone Lab, CFAES' Lake Erie island campus. Here's how they got their feet wet.*

Maddy Lambrix, a junior environmental science major, looked at harmful algal blooms (HABs) in central Lake Erie. Which nutrients limit their growth? (HABs, among other things, threaten drinking water pulled from the lake.) Working with Justin Chaffin, Stone Lab's research coordinator, Lambrix set up experiments, collected water during six-hour boat runs, and ran the equipment that tested the samples for nutrients and bloom-produced toxins. "I discovered that I really like being on boats," Lambrix said. "So, when we were out sampling on a nice day, it was pretty great to be doing something I enjoy and also protecting people's drinking water." O

Stacey Clay, a senior forestry, fisheries and wildlife major, studied breeding birds in nature preserves on islands near the lab. On a typical day, she and Rockford University's James Marshall, a Stone Lab summer instructor, motored by boat to a study site, hoisted bird-catching nets, collected data on robins and others, and safely released them. Clay later analyzed and reported the data; it might help determine which bird habitats to protect. REU is a "great way to get introduced to research," Marshall said. Said Clay: "I loved coming up to a net and seeing a new bird I'd never caught before." O

How well do walleye see when algae or mud cloud the water? That was **Andy Oppliger**'s question. (Walleye, a Lake Erie game fish, feed by sight.) Using equipment called an optomotor apparatus, the junior forestry, fisheries and wildlife major tested walleye in large indoor tanks. He ran several two-hour trials per day, recorded data and cared for the fish. REU students get hands-on training and "the kind of experience they need as they move forward with their careers," said Oppliger's mentor, Suzanne Gray of CFAES' School of Environment and Natural Resources. Oppliger said the connections he made "will last a lifetime." O

ATI's Associate of Applied Science degree in bioenergy and biological waste management prepares students to enter a burgeoning job market.

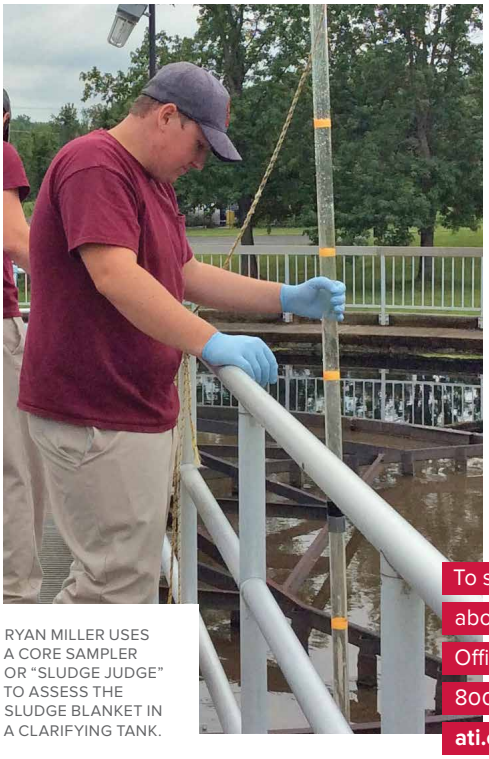
NEW **ATI DEGREE PROGRAM** ONE OF A KIND

FRANCES WHITED

Alternative energy and water resource management are two global issues of critical importance, and Ohio State ATI is addressing both through a new degree program that is unique in the United States.

The new Associate of Applied Science program in bioenergy and biological waste management will prepare students for careers as wastewater and drinking water treatment plant operators. Students will also be prepared for careers as operators or laboratory technicians in biogas, bioethanol and biodiesel production—technologies that go hand in hand with water quality, as they keep organic wastes out of underground and surface water systems.

The program is led by Dr. Victor Ujor, assistant professor in the Arts, Science, and Business Technologies Division at ATI. Ujor's area of expertise is waste remediation and energy production using biodigester technologies.



RYAN MILLER USES A CORE SAMPLER OR "SLUDGE JUDGE" TO ASSESS THE SLUDGE BLANKET IN A CLARIFYING TANK.

As with ATI's other Associate of Applied Science programs, students in the bioenergy and biological waste management program will complete a paid industry internship. Second-year ATI student Ryan Miller completed an internship this summer with the Delaware County Regional Wastewater District.

Miller said, "I decided to pursue this major because there are great career opportunities." Recently, National Geographic ranked water and wastewater treatment operator as the second fastest growing job among environmental sustainability-related jobs.

To schedule a visit to ATI to learn more about the program, contact the Office of Admissions at 330-287-1327 or 800-647-8283 (in Ohio only), or visit **ati.osu.edu**.

New ATI greenhouse range dedicated

New facilities will play a significant role in providing hands-on opportunities for Ohio State ATI students in the greenhouse and nursery management program. A new greenhouse range includes three greenhouses: a light-exclusion greenhouse with motorized blackout curtains; a propagation house; and a greenhouse dedicated to vegetable production, including hydroponics. A computerized automation system adjusts environmental conditions according to information from a weather station. Uttara Samarakoon, coordinator of ATI's greenhouse program, noted that the new greenhouses will prepare students for an industry that is always evolving. The facilities especially complement ATI's new specialization in greenhouse engineering technology, which, said Samarakoon, is filling a critical industry need. FRANCES WHITED

» *Want real-time information about what's going on at CFAES? Check out our new Twitter feed at* ***@CFAES_OSU****.*

CFAES COMMUNITY NEWS

CFAES faculty and staff engage Ohioans statewide, putting knowledge to work and to practical use for communities across the Buckeye state.

Ohio State gardening project to lower childhood obesity

Waterman Agricultural and Natural Resources Laboratory will soon be the site of a new project designed to reduce obesity in low-resource communities, thanks to a nearly $1 million grant from the U.S. Department of Agriculture. The Summer Harvest Adventure project will work with families in Ohio communities to promote obesity prevention strategies and fill the summer meal gap for participating children ages 8- to 11-years-old, said **Colleen Spees**, an assistant professor in the Division of Medical Dietetics and Health Sciences at The Ohio State University College of Medicine, who also has a courtesy appointment in CFAES. She will work with CFAES Professor **Matthew Kleinhenz** and Associate Professor **Ingrid Adams** on the multiyear project. During the project period, participants will receive food harvested weekly from Waterman. **TRACY TURNER**

COLLEEN SPEES, RIGHT, WORKS WITH A STUDENT, LEFT, TO HARVEST FRESH VEGETABLES AT WATERMAN. ELEMENTARY AND MIDDLE SCHOOL STUDENTS AND THEIR FAMILIES WILL SOON BE ABLE TO RECEIVE FRESH, HEALTHY FOODS WEEKLY DURING THE SUMMER HARVEST ADVENTURE PROJECT PERIOD.

Breaking: Arwen had her babies, Daryl shed his skin

Follow Skeate, Arwen, Hermione and Mr. Darcy, among others—radiotagged timber rattlesnakes living in southeast Ohio woods—on the **@TimberTweets** Twitter feed by CFAES' Peterman Lab. Lab staff are tracking the secretive snakes, an Ohio endangered species, to see how forest management affects them. Venomous but shy, with a taste for small rodents (including ones spreading Lyme disease), timber rattlers help ecosystems and, quietly, people. Lab head **Bill Peterman**, assistant professor in CFAES' School of Environment and Natural Resources, said, "I've had a passion for amphibians and reptiles since I was a kid catching frogs and snakes." **KURT KNEBUSCH**

Details:

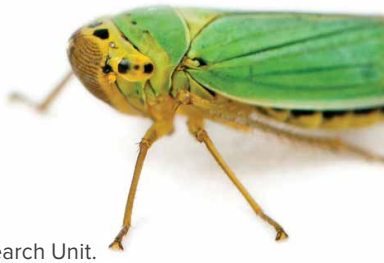
go.osu.edu/PetermanLab

vimeo.com/182386219

Linda Saif named Fellow in National Academy of Inventors

Linda Saif was designated a Fellow by the National Academy of Inventors. She was one of 175 academic inventors to receive the honor in 2017. The award is given to academic inventors and innovators who have "demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions and innovations that have made a tangible impact on quality of life, economic development and the welfare of society." Said Caroline Whitacre, senior vice president for research at Ohio State, "Dr. Saif has made landmark discoveries and performed innovative research that has benefited agriculture as well as human health." A Distinguished University Professor in the Food Animal Health Research Program at the Wooster campus, Saif is an internationally recognized virologist and immunologist. Her work on viral diseases is of critical importance to farm animals, food safety and human health. Her research has led to a framework for understanding how the immune system defends itself against viruses that cause intestinal infections in humans and nonhuman animals, leading to innovative approaches to vaccines and diagnostics.

'INSECT ALLIES': HOW THE ENEMIES OF CORN MIGHT SOMEDAY SAVE IT



A new technology could make it possible to save a growing crop from imminent widespread disaster—whether drought, pest or disease.

And it doesn't come in a pesticide sprayer.

Rather, scientists from The Ohio State University and partner institutions are using cutting-edge technologies from three scientific fields and combining them to provide an insect-delivered antidote, of sorts, to whatever ails a growing plant.

Dubbed "Insect Allies," the project is being supported by a $10 million cooperative agreement with the federal Defense Advanced Research Projects Agency (DARPA).

Guo-Liang Wang, a molecular geneticist in the CFAES Department of Plant Pathology, and Peg Redinbaugh, a geneticist with the U.S. Department of Agriculture's Agricultural Research Service (ARS), and an adjunct professor of plant pathology at Ohio State in Wooster, are co-leading the effort that includes scientists from ARS, North Carolina State University and Oklahoma State University.

The team, including geneticists, virologists and entomologists, is focusing on four major stressors facing corn: viral and fungal diseases, insect damage, and drought.

"If there's a widespread drought, but farmers have already planted a drought-sensitive hybrid, this will allow us to protect that crop in the field," Wang said.

The scientists are looking at modifying viruses to hold genetic information that will protect growing corn from one of the four stressors in the study. In the model, they are trying to build biologically modified insects such as leafhoppers or aphids that would carry the virus and transfer it to corn plants when feeding. After one of these insects bites a corn plant, the virus would replicate in the plant's cells, and the plant would express the helpful trait. The insect would then die soon after feeding.

"All three parts have been accomplished individually," Redinbaugh said. "We know about editing the genome for maize. We know how to engineer insects. We know how to engineer viruses. Now we're bringing them all together, doing the basic research to see if this is a possibility."

"Leafhoppers and aphids already do a good job of delivering pathogens to plants. This project will demonstrate how these same insects can be used to deliver something good, like drought-tolerance genes, to crop plants," said Astri Wayadande, a vector entomologist at Oklahoma State and a co-researcher on the project.

While the modifications would help a current corn crop, "they would not be passed on to the next generation. Farmers will be able to continue to use their seed as before," Wang said.

Multiple safeguards are built into the research, he added.

The study will be conducted at an ARS biosecurity level 3 facility at Fort Detrick in Frederick, Maryland, with all testing done inside. "Our role includes conducting this exciting, innovative research in a safe, contained system," said William Schneider, USDA-ARS plant pathologist at the agency's Foreign Disease/Weed Science Research Unit.

The technology would not replace the need for breeding plants with resistance to stressors, Redinbaugh said. "If a disease is widespread in a region, growers should plant corn that has resistance to that disease built right into the seed."

"The new technology might help stop a new disease from taking hold in a new location. The goal is to address an acute problem or prevent that problem from getting worse," she said. "It's intended to address catastrophic events that would affect the food supply."

The technology could provide great benefits and advances to the research community as well, Wang said.

Anna Whitfield, an NC State professor of entomology and plant pathology, agreed, adding that "the project's goal is to turn the pests and pathogens that are attackers of plants into their protectors."

The scientists credit a relatively new breakthrough technique called CRISPR-Cas9 with making the project possible. Compared to older gene editing technologies, CRISPR-Cas9 makes gene editing easier to perform and has a high success rate.

"Only a few short years ago, the project's aims would have been pure science fiction," said Marce Lorenzen, an NC State associate professor of entomology and plant pathology. "The CRISPR revolution has dramatically expanded the boundaries of what's possible. The engineering feats required for the success of this project simply would not be possible, at least not in a timely or cost-effective manner, without the CRISPR-Cas9 nuclease system to create the necessary modifications to the insect and plant genomes." **SUZANNE STEEL**

FABE colleagues awarded by professional society

Faculty members and alumni of the CFAES Department of Food, Agricultural and Biological Engineering were honored in July at the American Society of Agricultural and Biological Engineers. **Erdal Ozkan** was named a Class of 2017 ASABE Fellow, the organization's highest honor. ASABE defines a Fellow as a member of unusual professional distinction, with outstanding and extraordinary qualifications and experience in, or related to, the field of agricultural, food or biological systems engineering. They possess a minimum of 20 years of active practice in, or related to, the profession of engineering; the teaching of engineering; or the teaching of an engineering-related curriculum and a minimum of 20 years as an active member-engineer or member in ASABE. **Scott Shearer** received the Cyrus Hall McCormick Jerome Case Gold Medal Award, which honors exceptional and meritorious engineering achievement in agriculture that has resulted in new concepts, products, processes or methods that advance the development of agriculture. **Ann Christy** received the Massey-Ferguson Educational Gold Medal Award, which honors those whose dedication to the spirit of learning and teaching in the field of agricultural engineering has advanced with distinction our agricultural knowledge and practice and whose efforts serve as an inspiration to others. Alumna **Sylvia Schonauer**, retired from Kellogg Co., was named a Class of 2017 ASABE Fellow, and alumnus **Matt Darr**, now with Iowa State University, received the New Holland Young Researcher Award for outstanding contributions to the advancement of the profession and for stimulating professional achievement.

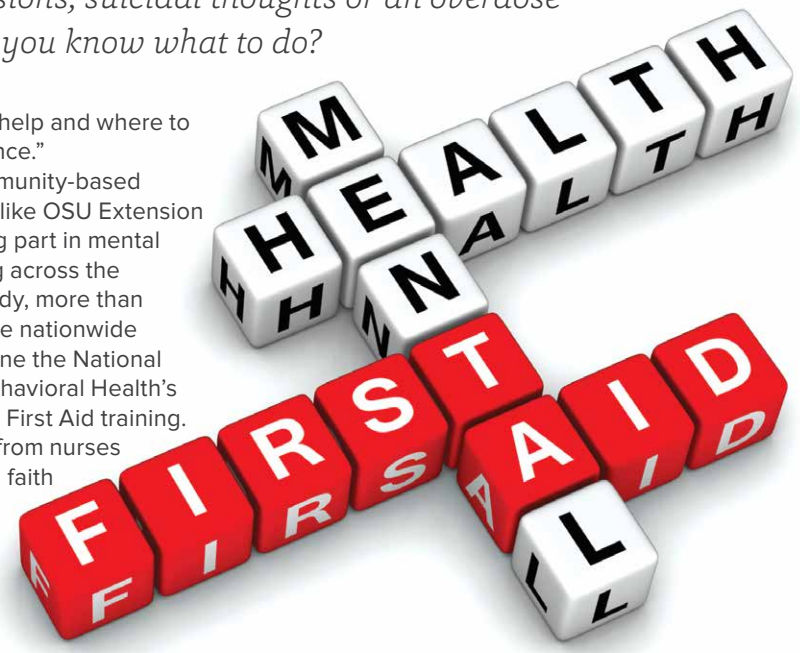
CORRECTION

In the last issue of *Continuum*, one of the chair names of the CFAES Department of Agricultural Communication, Education, and Leadership was inadvertently omitted from the timeline celebrating the 100th anniversary of the department. From 2002 to 2009, **Robert J. Birkenholz** served as department chair. We apologize for the omission.

MENTAL HEALTH FIRST AID: RECOGNIZING THE WARNING SIGNS

TRACY TURNER

If someone were having a panic attack, delusions, suicidal thoughts or an overdose from alcohol or drugs in front of you, would you know what to do?



Mental Health First Aid, offered by the National Council for Behavioral Health, is being offered to OSU Extension staff statewide. The goal is to help people gain the skills needed to identify, understand and respond to signs of mental health and substance/opioid abuse challenges and crises.

OSU Extension professionals are in all 88 Ohio counties. Therefore, it is invaluable to arm them with the ability to respond to a mental health or substance abuse crisis, said Roger Rennekamp, director of OSU Extension.

Mental Health First Aid trains people to detect the early warning signs of a mental health crisis, including training them to know when to make referrals for resources to help.

"The training is designed to help agency professionals and community members spot warning signs of mental illnesses and make appropriate referrals for assistance," he said. "It provides us with helpful ways to respond to a mental health or opioid crisis, including how and when to offer help and where to go for assistance."

More community-based organizations like OSU Extension are now taking part in mental health training across the country. Already, more than 1 million people nationwide have undergone the National Council for Behavioral Health's Mental Health First Aid training.

Everyone from nurses and leaders in faith communities, to teachers and emergency medical technicians, to faculty and staff at colleges and universities, to correction officers and police officers have undergone the training, according to Linda Rosenberg, president and CEO of the Washington, D.C.-based nonprofit organization.

With an office located in every county, OSU Extension is uniquely positioned to address the relationship between mental health disorders and the prevention of opioid abuse in Ohio.

"We believe every American could benefit from this training, and we vow to work hard to spread the word until Mental Health First Aid is as common as CPR," she said in a written statement.

For OSU Extension staff, Mental Health First Aid certification is a natural outgrowth of the organization's land-grant mission to provide outreach and education for Ohioans.

"OSU Extension's broad range of programs and activities has the ability to reach many different individuals, groups and organizations statewide," Rennekamp said, noting that OSU Extension is a "conduit to the community from the broader expertise of the university."

OPIOIDS *in* OHIO

RECENT STATISTICS UNDERSCORE THE GROWING PROBLEM STATEWIDE.

Ohio now leads the nation in opioid-related overdose deaths, with a record 4,050 drug overdose deaths reported in 2016—a 33 percent increase from 2015, according to the Ohio Department of Health.

In 2015, Ohio emergency management services personnel administered 19,782 doses of naloxone, the opioid reversal drug. That accounts for 7,207 more doses than in 2013.

"With an office located in every county, OSU Extension is uniquely positioned to address the relationship between mental health disorders and the prevention of opioid abuse in Ohio."

The adult course offers insight into several mental health disorders: depression, anxiety/trauma, psychosis and psychotic disorders, substance abuse disorders, and self-injury. In addition to the mental health disorders covered by the adult course, the youth course includes insight into adolescent development and mental health, said Jami Dellifield, an OSU Extension educator who has undergone the certification and is now a certified instructor.

The certification includes the ALGEE method, a five-step, triage-style response plan for nonprofessionals. It teaches people to assess for risk of suicide or harm; listen nonjudgmentally; give reassurance and information; encourage appropriate professional help; and encourage self-help and other support strategies.

"It's like CPR, a basic first aid class to learn how to help someone experiencing a mental health problem or substance abuse crisis," she said. "This training teaches you how to stand in the gap until the appropriate help can arrive."

The training for OSU Extension staff is funded through a grant from the U.S. Department of Agriculture and the Substance Abuse and Mental Health Services Administration, Rennekamp said. **0**

It's like CPR, a basic first aid class to learn how to help someone experiencing a mental health problem or substance abuse crisis. This training teaches you how to stand in the gap until the appropriate help can arrive.

CFAES security reaches beyond campus to reverse two opioid overdoses

The woman lay unconscious beside the gas station's trash can in a rural pocket of the state that's become accustomed to opioid overdoses. She was in her twenties, the mother of a toddler.

The woman was not breathing when Justin Estill arrived at the Wooster, Ohio, gas station, just across the highway from the city's campus of the College of Food, Agricultural, and Environmental Sciences. He's a public safety officer for the Wooster campus, and though his main responsibilities are to keep the campus safe, he and other officers can assist with community calls.

Estill reached for his Narcan kit and injected the naloxone into the woman's nostrils. And then she responded. Firefighters drove her to a nearby hospital, where she walked out of the emergency room the next day.

This was the second time in six months that Estill had reversed an opioid overdose. A few miles south of campus, a woman overdosed in a home and after Estill administered naloxone to her, she too awoke.

"These are two lives that could have been lost here," said Seth Walker, public safety manager for the Wooster campus. "Maybe it's the 'one more time' they needed to try to turn everything around."

Whenever possible, CFAES security personnel try to assist with emergencies beyond the Wooster campus because the college is part of the Wooster community, Walker pointed out. Faculty and staff members live in the area, and their children attend local schools.

"It doesn't serve anyone to put up walls and say, 'I'm sorry, you have to handle that yourself.'" **0**

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Columbus, OH 43201

ADDRESS SERVICE REQUESTED

Who is comforting whom?

Many stories exist about the benefits of pets and other animals in our lives. Now, through research, a new CFAES center is putting numbers behind those anecdotes. The Center for Human-Animal Interactions Research & Education differs from other similar centers because it is looking at interactions between people and multiple categories of animals: pets, livestock, wildlife and entertainment. It's also exploring both sides of human-animal interactions: the impacts on people and the impacts on animals. "It's all about how animals fit into society and how we want them to fit," said Kelly George, animal sciences professor and steering committee member for the center. One project under consideration will look at how animals can help children who grow up in homes where there is opioid abuse, as well as how that arrangement might affect the animals. **SUZANNE STEEL**

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