

NC STATE
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Department of Food, Bioprocessing and Nutrition Sciences **DIGEST 2019**

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UPCOMING EVENTS

2019

Open House for Parents of Graduates	Dec 18
Fall Commencement	Dec 19

2020

End-of-Year Cookout	April 21
Awards Banquet	April 23
Spring Commencement	May 9
Faculty and Staff Retreat (Kannapolis)	May 14
FNBS Breakfast at Annual IFT Meeting (Chicago)	July 13

Learn more at go.ncsu.edu/fbns

WITH GROWTH COMES CHANGE

In the more than a half-century since NC State established a program for the study of food science, there have been many changes in the field and how we teach it. A little over a decade ago, the original Food Science department expanded to include studies in nutrition and bioprocessing, creating the new Department of Food, Bioprocessing and Nutrition Sciences (FBNS).

FBNS is home to more than 100 exceptional faculty and staff who work with and guide some 500 extraordinary students. Our faculty, staff, and students are spread over a growing network of departmental facilities – Schaub Hall and the Dairy Farm in Raleigh; the Plants for Human Health Institute in Kannapolis; and the Center for Marine Sciences and Technology in Morehead City. The College of Agriculture and Life Sciences Information Technology (CALS IT) group now supports our increased digital and computer needs; they are an essential part of our growing FBNS family.

Our faculty is changing. Several faculty members retired in the past few years. Their hard work and dedication to the mission of the department, college, and university paved the way for the next generation to affect even more innovation in research, teaching, and extension. We wish these former department leaders the best of luck in their retirement and offer our gratitude for their contributions.

Our faculty and staff are growing. In the past two years, we hired several energetic and proactive faculty and support staff. Among them are a food science lecturer and six assistant professors, including a food engineer, a food chemist, a teaching assistant professor and specialists in seafood, nutrition, and plant food processing. In the next year, I anticipate hiring three additional assistant professors and an industry-alumni liaison.

Our programs are growing. We expanded our brewing program and now plan to offer a Fermentation Science minor in the near future. Additionally, the Howling Cow brand ice cream is now sold in several Harris Teeter locations throughout North Carolina.

Our facilities are growing. In fall 2019, construction will be completed on the Dairy Education Center and Creamery in Raleigh and the Food Innovation Lab in Kannapolis. With these facilities, we will capitalize on new growth opportunities.

Without growth, there can be no change. I invite our alumni and industry friends to team with us as we launch the Industry Partners Advisory Council (IPAC) and chart the course for the future of the department.

Thank you to the amazing faculty, staff, emeritus faculty, retirees, students, alumni and industry partners for their continued dedication and support. I look forward to our bright future and the continued progress of FBNS.



K.P. Sandeep
Department Head

CONGRATULATIONS, GRADUATES!



FBNS Fall 2018 Graduates



FBNS Spring 2019 Graduates



SOLVING THE BIG CHALLENGES

By Alice Manning Touchette

Professor E. Allen Foegeding on Food, Cross-Discipline Research and Mentoring

How are we going to feed the world in 2050?

That has been on the mind of Professor E. Allen Foegeding for several decades and is one driver of his work in food science. As a specialist in food chemistry and the sensory experience of food texture, Foegeding retired in June 2019 after a 37-year career at NC State in the Department of Food, Bioprocessing and Nutrition Sciences.

"The world population has doubled since 1972," said Foegeding. "We need to think about holistic solutions for food that focus on health, nutrition, sustainability, affordability and cultural adaptation."

Foegeding studies how the senses perceive food structures, important elements when developing new products for consumption.

"We can be sharing the same meal and your brain is saying, 'This is the best meal I've had in my life,' and I'm thinking 'I can't stand this, I don't want another bite,'" said Foegeding. "That's the challenge of food. I try to understand how molecules come together to form the structures of food and what components provide the sensory properties—specifically texture. For example, when you bite into a perfectly crisp apple, what's the food's structure that gives it that quality opposed to the mealy apple that you don't like."

Research that Benefits Society

To tackle one element of texture, Foegeding worked with the Southeast Dairy Foods Research Center (SDFRC) at NC State — a collection of scientists who work together to study, among other priorities, milk and whey ingredient functionality, thermal and biological processing, sensory properties of cheese and dairy ingredients, dairy food safety, and microbial technologies for starter cultures and probiotics. Funded by Dairy Management Inc. through the National Dairy Council, Foegeding lauds the SDFRC for providing research funds to develop great ideas.

With support from SDFRC, Foegeding studied how to use a by-product of cheese making to generate a functional source of protein.

“Whey proteins are the poster child for sustainability,” said Foegeding. Instead of discarding the whey, Foegeding and his team learned how to utilize it for sports beverages, bars and a range of food applications.

“Whey is a highly nutritious form of protein, and I studied how it could function so that we could significantly increase the protein content of a product and have it remain stable on a shelf without separating or gelling,” he explained.

His expertise in this area led him to work with scientists from around the globe. Following a sabbatical in 1995-96 at New Zealand Dairy Research Institute, he worked with Fonterra, a global dairy company and the world’s largest dairy exporter. Fonterra organized the Transforming the Dairy Value Chain (TDVC) Primary Growth Partnership program, a seven-year, \$170 million investment for innovation. The TDVC combined experts from industry, government and academia “to enable the creation of new dairy products, increase on-farm productivity, reduce environmental impacts, and improve agricultural education.”

For one week in each of the seven years, Foegeding served as an expert in food chemistry to advise on texture and food structure and lead workshops for scientists and researchers.

“Industry, academic, government partnership is always a compromise,” explained Foegeding. “But the overall effort produced a greater output than anyone could have accomplished alone.”

The project resulted in expanded dairy-related technology, and for the academics, providing insight for numerous publications.

“Food scientists want to see our work benefit society, otherwise it’s useless,” said Foegeding.

Toward this ambition, Foegeding authored more than 200 scholarly articles, working with scientists and researchers all

over the world, including Erik van der Linden, professor of physics and physical chemistry of foods at Wageningen University in the Netherlands. The two scientists co-authored a chapter entitled “Gels: Principles, Models and Applications to Proteins” in the book *Modern Biopolymer Science* (Kasapis, Norton and Ubbink, eds. 2009), blending their expertise in physics and food science related to protein gels.

Professor van der Linden also described a visionary article the two published in *Trends in Food Science and Technology* that gave their “systematical approach for addressing the global challenges of agriculture and food systems.” Their work helped enable stakeholders and policymakers to better anticipate and respond to the emerging developments in the world related to food.

“He brought out the best in me and has become one of my best friends over the years,” said van der Linden. “His strength is his sincere interest in connecting to other people.”

That sentiment was echoed by another of Foegeding’s research partners Chis Vinyard, an evolutionary biologist and professor of anatomy at Northwest Ohio Medical University.

In 2019, the two researchers collaborated on a journal article about polysaccharide gels, how they are chewed and their texture.

“With food, we’re making material to fall apart with grace, meaning that it breaks down along a specific path during chewing that produces enjoyment,” explained Foegeding. “I wanted to study oral processing—jaw movement, muscle activity—to understand the process that occurs when people eat foods.”

“I’m an evolutionary biologist that studies feeding—I don’t fit in the food science world—but I had the oral processing and physiology background Allen was interested in,” said Vinyard. “He thinks very broadly trying to understand how the whole system works, not just the one part that he was trained in. The way he looked at how food was processed really moved the field forward.”

“I integrate it all so we understand how to make a food structure deliver certain textural properties to create desirable foods from different material sources,” said Foegeding. This insight is useful

“Industry, academic, government partnership is always a compromise. But the overall effort produced a greater output than anyone could have accomplished alone.”





when applied to making gluten-free products, for example, with the goal of replacing gluten with a food material that provides the same level of quality.

Editor-in-Chief

Foegeding doesn't just write for scientific journals, he's also editor-in-chief of The Institute of Food Technology's three monthly journals: *Journal of Food Science*, *Comprehensive Reviews in Food Science and Food Safety* and *Journal of Food Science Education*. Holding the position since 2012, Foegeding said editing the peer-reviewed journals, which are accessible behind a paywall, has made him consider the pros and cons of open access.

"When it comes to the debate on how scientific work is going to be made available, I think we need a way to make it accessible, especially when it's vetted by editors and reviewers," said Foegeding.

With the growing number of self-publishers and self-proclaimed experts on the internet, it is vital to have access to current, accurate information and educate consumers how to decipher what information is reliable.

"We're now teaching how to sort through the information to find what's factual. We're educating students about what makes a valid source," said Foegeding.

"The people I interacted with and influenced — my students and colleagues — are my real legacy. They are my future."

A Lasting Legacy

Even with his prolific contributions to the field of food science, Foegeding said that's not his real legacy in the field.

"The publications will fade," he explained. "The people I interacted with and influenced—my students and colleagues—are my real legacy. They are my future."

Foegeding helped 65 graduate students finish during his tenure and was named a William Neal Reynolds Distinguished Professor.

"I'm most proud of the students," said Foegeding. "It's great to see them go on and do well."

Former student Paige Luck (M.S. '07, B.S. '00) is now a lecturer in the Department of Food, Bioprocessing and Nutrition Sciences at NC State and worked with Foegeding for 18 years.

"Allen's model of critical thinking and life-long learning has had an immense impact on my life," said Luck. "When I was a student, he actively taught us how to critically think about the data presented in the articles and form conclusions. I apply this critical thinking model when preparing for teaching and other areas of my life, from daily decisions to spiritual pursuits."

Foegeding particularly enjoyed working to help his students with their writing.

"He's one of the most well-read people I know," said Luck. "The writing and editing process requires a great deal of patience and dedication on the part of the mentor. Allen would always have drafts returned in record time, sometimes the same day, with valuable suggestions and comments."

Foegeding knows how instrumental mentoring can be. He credits his mentors at the Universities of Missouri and Minnesota for pushing him at the right moment.

"I had two advisors on my Ph.D. at the University of Minnesota. I owe all my vision to Gene Allen, and I owe my skills as a lab scientist to Bill Dayton, who was an outstanding muscle protein biochemist during my time there."

He also claimed he may never have gone back into academia and research if it weren't for an insightful employer who pushed him. In his first post-graduate job in product development at Land O' Lakes, his section manager, Marshall Meyers said, "Allen you need to go back to school. You like to understand the mechanisms of how things work. That's what motivates you."

Foegeding said that push was what he needed to get on the path that led him to explore his research passions and to NC State.

"I strived to be that hidden angel for others over the years," he said. "Sometimes that was as a grant panelist who fought to fund a young researcher's work. When you see somebody who's outstanding and you're in a senior position to promote them, you have to help."

That tenet is perhaps Foegeding's greatest legacy, and one that he has passed onto his colleagues and students.

"His ability to see the best in people and his lifelong curiosity is something that I admire and work hard to give back to the students who I now teach," said Luck.

After working generously and tirelessly with colleagues across disciplines to advance his and their research, Foegeding has more tempered plans for his retirement. He will remain editor-in-chief for The Institute of Food Technology journals through 2020. He also plans to travel and hike with his wife, when not visiting his two daughters and their growing families.



A LEGACY OF LEADERSHIP AND GROWTH

By Juliana Mccully

Sarah Ash helped create the department's major in nutrition and developed a critical reflection model where students connect community learning experiences to what they have learned in class.

They say she's a legend at NC State, and it's not just because she helped create and oversee the development of the major in nutrition. Sarah Ash, Ph.D., is a teacher, a mentor, advisor and friend. A scientist, writer, leader and critical thinker with a commitment to students, colleagues and learning based on relationships, growth and grace.

"She's the reason we're all here," said Natalie Cooke, Ph.D., who has called her both "Dr. Ash," as her teacher, and "Sarah," as a friend and colleague. "Our program is strong because Sarah created it and has continued to make sure it has rigor and that students stretch and grow.

"Every class is thoughtful, and she made sure it was focused on nutrition science," said Cooke, assistant professor and undergraduate coordinator for nutrition science. "Other programs may focus on application, but our program really stands out for scientific inquiry and community-based learning.

"She's a legend; everyone knows her at the university. She's deeply respected and has made a significant impact."

Food Fads and Nutrition Science

In 30 years at NC State, the professor who built a career around reflection has seen nutrition trends come and go - from no-fat and low-fat to coconut oil, kale, coffee and keto. Plenty has changed, and the frontiers of nutrition remain rich, but the science, students and science education haven't changed all that much, she said.

It comes back to reflection, relationships and learning how to think critically.

"You can have answers in a nanosecond, but what's important is to give students practice in thinking critically - learning how to learn, think, process and adapt," she said.

Nutrition research has exploded in the past 30 years, but drawing meaning from the science is complex.

"Nutrition is an interesting field - fascinating, frustrating and complex," Ash said.

"Certainly, what we eat can affect our health, but once we discovered all the essential vitamins and minerals, nutrition research became complicated because no matter what compound, any relationship to health has so many factors - the food itself, the body, genetics.

"Our ability to even really know what people eat is increasingly fraught, yet it's really the only tool we have," she said.

"Media stories point to this thing or that thing - when I was in graduate school, it was fats. The microbiome is very hot right now, food as medicine, and I hear inflammation is back. Even in mainstream nutrition research, something will get a lot of attention - vitamin D, antioxidants, fish oil, and it becomes a solution for everything.

"There are interesting theories and observations, but it's very hard to study, and every population is different, Ash said. "Often, large-scale clinical trials that directly test hypotheses just don't pan out - the exception is studies that look more at patterns than components.

"It isn't that we shouldn't keep asking the questions," she said. "It's how we phrase the answers. Even in the scientific community, there's a lot of over-selling.

"As scientists, we're trained to be very productive and get it down to the answer, like when it was vitamin C or niacin. But we are beyond that now, so it's these big pictures with complex combinations of things. That may be what genetics (especially genome mapping at the individual level) can show us," she said.

The Real DEAL Legacy

Even as students have the opportunity to take classroom learning into the community with service-learning projects, you see that the big concerns we have are all complex, and there are no simple approaches, Ash said.



"I hope they come away with [the] ability to ask the right questions. I hope they know they need to ask questions and to be sure they're always questioning their assumptions."

A critical reflection tool for doing just that may be her legacy to the university and the field.

Ash and colleagues developed the DEAL model (Describe, Examine, Articulate Learning) to help students identify and process, in a structured way, what they have learned in a community- or service-learning setting. Service learning applies academic concepts in the community to address problems.

The DEAL model connects those experiences to course material; challenges beliefs and assumptions; leads students to consider what they've learned about themselves; what they've learned about how an organization works to meet collective objectives; and to articulate that in writing.

Ash has been a campus leader in developing courses and pedagogy for experiential learning, and the DEAL method is used on campuses nationwide and internationally.

"From a scholarly perspective, the model is used and cited quite a bit in the literature," she said. "And a lot of people have found it to be very helpful, especially in experiential learning. You ask the student how it was, and they say 'great,' but it doesn't get to anything deeper than that. As T.S. Eliot said, 'We had the experience but missed the meaning,' and that's what the DEAL method tries to get."

The model also allows the instructor to assess what students are learning.

"Earlier on in teaching, I assumed students could do it because I could do it," Ash said. "Then, I realized that it's not as plain as the nose on your face. You can't see your nose; you need a mirror. And that was my job, to hold up the mirror, to model, to provide extensive comments.

"The challenge for university education will always be how do you balance the time it takes to teach well and the time the faculty has

to do it," she said. "Critical reflection is an approach that resonates with me."

Increasingly, Ash said, it's about learning the bigger-picture things: "With nutrition, you need to compare what we used to know with what we know today and what we'll need to know tomorrow. Science is an ever-changing process, and you need a little bit of humility."

Humility, Humanity, Excellence

That legacy and the reflection tools embodied by DEAL are just part of the profound personal influence Ash has brought to her years at the university, contributions that colleagues and students say belie her own humility.

"Sarah was the first person I met at NC State," said Suzie Goodell, Ph.D., associate professor of nutrition and director of the nutrition graduate program. "When I came to interview for my job, she picked me up from the airport, took me to lunch, and introduced me to life as a faculty member in FBNS. If I was nervous, I don't remember it. She made me feel like I was with an old friend, but we'd just met.

"I call our department 'the happiest place in academia,' in no small part to how Sarah made me feel like FBNS was my academic home and would be forever," Goodell said.

"She set the tone for what Suite 218 has become – a place where students feel like they can stop by and say 'hi,' or close your door and cry; a place where people inside truly care about you as a person.

"Sarah showed me that students in our classrooms are people outside of school, and when students are struggling in our classes, there is an underlying cause to their struggle. We, as compassionate educators, should seek to understand the backstory and help where we can."

Goodell pointed to one of her mentor's most helpful mantras: When working with a student, think about how you would want someone to treat your daughter. Then, "give grace to those who make mistakes and don't have it all together but hold them

"She's the reason we're all here. Our program is strong because Sarah created it and has continued to make sure it has rigor and that students stretch and grow."

accountable, so they will learn to do better next time.”

When Natalie Cooke was an undergrad, she was referred to Ash because of her interest in the subject: “I walked out of her office and decided I wanted to add nutrition as a second major. She connected me to research, and through that experience, I got to collaborate on service-learning research projects. I eventually went on to get a Ph.D., and she was on my doctoral committee.

“Sarah taught me what service-learning programs are and how we can connect students to community partners. Sarah introduced us to the DEAL method, best practices, and she helped me develop my knowledge in that area. I can always go to her for advice, and I know she’s going to give me a good answer, because she thinks critically, as she teaches her students to think critically,” Cooke said.

“She’s a fantastic writer, which you can see in her scholarly work, and she helped mentor me as a writer. As an educator, she teaches students to contribute their thoughts to classroom discussion; will walk students through difficult concepts with great clarity and helps them build confidence. She’s an educator in so many capacities, truly so skilled and creative about engaging students in the classroom.

“She taught me a lot about advising and understanding students as individuals, their strengths, and how to help encourage them to pursue internships and volunteer experiences that will get them out in the community and

the workplace, building valuable transferable skills. She taught me the ropes, and when it came time for Sarah to retire, I had the opportunity to take over that undergraduate advising role.

“I am lucky that Sarah is a mentor, a teacher, and she is my friend.”

It’s the Students

There have been accolades, published works, and thousands of students in her 30 years of teaching, inquiry, advising and mentorship, and the time has flown.

“It doesn’t seem like 30 years; it really doesn’t,” she said.

Ash is still sorting out what’s next but is worried she’ll miss it.

“It’s interesting being in a university environment; understanding how people think and learning how to think; asking questions, challenging, and coming up with solutions,” she said. “It’s just very intellectually engaging.”

“It all comes back to the students,” Ash said.

“In the end, that’s what motivated me: When a student makes those connections or says, ‘I never thought about it that way.’ When you run into them at the grocery store 20 years later, and they remember your class – it’s just really exciting and rewarding.”

"She's a legend; everyone knows her at the university. She's deeply respected and has made a significant impact."



I AM CALS: FRED JIMENEZ

Who gift-wrapped office administrator Beth King's desk with 400 square feet of snowflake wrapping paper after she skipped the department's annual holiday lunch?

"Fred," says King.

"Fred," says Department Head K.P. Sandeep.

"Yeah, it was me," says FBNS employee Fred Jimenez. His title is technically "executive assistant," but that doesn't cover it. Ten years into his career at FBNS, he is the department's mister fix-it, master of ceremonies and unofficial CALS search engine.

Jimenez wrangles budgets, organizes events, streamlines personnel tasks, critiques professional presentations, sets up video conferences and anything else that's needed. If he can't answer your question about CALS, then he knows the person who can.

He's also the go-to guy for intangibles like boosting department morale through pranks and kooky office games – and for lending an ear to anyone who needs a listener.

"When he's in charge of something, I know I don't need to worry," Sandeep says. "I know Fred will handle it."

Ask Jimenez about himself, and he'll start by telling you about his family. His wife, Denise, is a former CALS employee who now works in human resources at NC State. Their daughters, Gracie and Samantha, are 12 and 7. What does he like about his job in the department? The family-oriented policies that let him pick up his kids from school early if they get sick or allow them to visit the office during snow delays.

"That's the most important thing, and it's a big part of why I've stayed at CALS as long as I have," he says. "The department feels like a family."

Jimenez grew up in San Jose, California, just as Silicon Valley began to boom. He jumped right into working at a startup. He started as an account manager, first for an online advertising company, then for an online cell phone supplier. Then he met his wife, Denise – sort of. She was working with one of their data entry partners in Maryland.

"Sometimes connecting over the phone is better than in person," Jimenez says. "It's more from the heart."

After a fateful road trip to Raleigh when a hurricane knocked out power in the Washington, D.C., area, the Jimenez's moved to North Carolina, started working at NC State, and have been here ever since.

Stroll the campus with Jimenez, and you'll see why he has a reputation for not just knowing everybody, but being on teasing terms. Try taking his picture outside Schaub Hall, and you'll draw a crowd of jokesters. "Oh, look at this troublemaker," was the most common comment, accompanied by a head shake and a grin. Wherever Jimenez goes, there will be banter.

Jimenez's dedication to morale is grounded in his appreciation for his co-workers – from faculty to administration to staff.

"What I've learned working here is that I can't do my job without everybody else on campus," Jimenez says. "I can only take like 5 percent of the credit for what I do."

In Sandeep's opinion, that estimate is too modest.

"People who know only the fun side of Fred may think it's all about fun, but he's super-efficient," Sandeep says. "Answers are quick. Solutions are quick. He's a fantastic asset to our department."



STUDENT SPOTLIGHT: JUAN ASCENCIO MAKES HIS MARK IN MEAT CONTEST



In the world of charcuterie – the art and science of making cured meat products – there’s no bigger, more important trade meeting than one known simply as IFFA. When the event gathered more than 60,000 people from around the world in Frankfurt, Germany, in May 2019, CALS’ own Juan Ascencio was among them.

A master’s student in FBNS, Ascencio won five gold medals, a silver and a bronze at the German Butchers’ Association and the American Association of Meat Processors’ Quality Competition for Sausage and Ham. He prepared summer sausage, liverwurst, Italian dry salami, two Spanish chorizos, knockwurst and frankfurters for the competition. All were rated for appearance, consistency, smell and, of course, taste. With guidance from Professor Dana Hanson, Ascencio received perfect scores for each of his entries that won gold medals.

And thanks to his performance, NC State was recognized at IFFA with the prestigious Cup of Honor for Special Achievements.

The experience, he said, is giving him a good head start toward his ultimate goal of working in the meat processing industry.

Under the guidance of Dana Hanson, Juan’s research will focus on the difference in the use of hardwood versus wood chips to make meat products. “We’ll see if people prefer the flavor that the hardwood makes versus the chips or the sawdust. We’re also trying to see the flavor profiles that people like with smoked products.”

Read Juan’s story and learn how he developed a passion for charcuterie: go.ncsu.edu/fbns-ascencio

HEALTHIER FOODS, WITH LESS FOOD LOSS

Consumer interest in food made with fewer and simpler ingredients is rising. For entrepreneur Will Kornegay, meeting that demand is more than a moneymaking opportunity. It's personal.

Kornegay, an NC State alumnus, has a life-threatening food allergy. He had difficulty finding processed foods with labels that clearly let him know which ones were safe to eat.

Thanks to NC State research and a partnership with SinnoVita, a health-food ingredient technology company, Kornegay's company, Ripe Revival, sells protein-packed fruit gummies produced using a technology that concentrates healthy proteins and fruit compounds and modifies proteins so they don't trigger allergic reactions.

The technology also allows Ripe Revival to realize one of the company's main goals: to make use of leftovers from farms and food processors. The company won funding through Kroger Co.'s Zero Hunger | Zero Waste Foundation to accelerate solutions that help end food waste.

Ripe Revival's gummies evolved from the research and technology of Mary Ann Lila, the director of the Plants for Human Health Institute in Kannapolis, and Josip Simunovic, an FBNS research professor.

Food manufacturers can now extract polyphenols - non-essential nutrients - from fruits and vegetables and fuse them to a protein source. The result: a protein ingredient enriched with health-promoting compounds.

Food science graduate Nathalie Plundrich came up with the idea of using the technology to create gummies as a master's and Ph.D. student in Lila's lab. She brought the knowledge with her when she joined SinnoVita's parent company, SinnovaTek, as a food technologist in 2018.



FBNS COMMUNITY

Food Science Club Hosts Banquet

The FBNS Awards Banquet was held on April 17, 2019, at the Hunt Library. Scholarship donors, award recipients, CALS administration personnel, and FBNS folks attended. Congratulations to the Food Science Club for another outstanding event.

Fun + Family

The annual FBNS retreat was May 16, 2019. It was a good opportunity to interact with some of the newest members of the FBNS family. Several great ideas to move FBNS forward were generated throughout the day. The next FBNS retreat will be in Kannapolis on May 14, 2020.

Howling Cow and Harris Teeter



Harris Teeter licensed the Howling Cow trademark and certain ingredients and formulas from NC State, and now manufactures pints of six different ice cream flavors that can be purchased at various Harris Teeter locations in NC.

"Harris Teeter continues to be an excellent partner and supporter of our agricultural education programs. This unique partnership will make it convenient for people to enjoy Howling Cow without coming to campus or waiting in line at the State Fair," said Gary Cartwright. NC State will use proceeds from the licensing agreement to fund student scholarships and dairy and agriculture initiatives.

FBNS IN THE NEWS

Chancellor's Innovation Fund Helps Turn NC State Research into Real-World Solutions (NC State Office of Research and Innovation News): The Department of Food, Bioprocessing and Nutrition Sciences has been successful in obtaining funding through the Chancellor's Innovation Fund. Dairy processing experts Gary Cartwright and Carl Hollifield have discovered a way to convert coffee beans into a direct food additive, allowing for unprecedented flavor and caffeine potency in coffee-infused products. **Rodolphe Barrangou** is using CRISPR to unlock the capabilities of gene editing for the forestry industry. go.ncsu.edu/fbns-innovation-fund

Nostalgia Is a Key Comfort-Food Ingredient, but Science Explains Our Cravings (IndyWeek): Lindsay Tanskey and Jonathan Allen were quoted explaining "comfort foods." go.ncsu.edu/fbns-indy-week

Jonathan Allen discusses why fruits and nuts contain fat in **Is There Fat in Fruits and Nuts, and How Much? (NC State News):** go.ncsu.edu/fbns-fat-fruits-nuts

Natalie Cooke's *My Nutrition Education for Diverse Populations* students are featured in **What's Cooking at DHIC Senior Communities (DHIC website):** go.ncsu.edu/fbns-dhic-seniors

A New Reality for Online Education (DELTA News): Clint Stevenson shared details on the partnership between his team and DELTA to create virtual food processing facility environments: go.ncsu.edu/fbns-online-ed

A 'Big Red Letter' Changed Everything (NC State Giving News): Senior Dorcas Mabiala reveals how NC State's Pack Promise program led her to FBNS as a nutrition science major: go.ncsu.edu/fbns-mabiala

WolfWare Outreach Impacts Food Safety (DELTA News): Clint Stevenson and his team have created a successful outreach program in food safety for the food manufacturing industry including food service, restaurants and retail: go.ncsu.edu/fbns-wolfware-food-safety

MaryAnne Drake, William Neal Reynolds Distinguished Professor of Food Science, takes us **Inside Sensory Services (NC State Executive Vice Provost and Chancellor News):** go.ncsu.edu/fbns-sensory-service

Sofia Feng was highlighted in the **IFT Nutrition Division newsletter** for winning the Nutrition Division Poster Competition at IFT18: go.ncsu.edu/fbns-nutrition-div-story

WRAL.com reported on the expansion of **Howling Cow** ice cream to more Harris Teeter stores across North Carolina: go.ncsu.edu/howling-cow-wral

I Am CALS: Fred Jimenez Knows (Almost) Everything (CALS Magazine): Read why Fred Jimenez is a "fantastic asset" to the FBNS department: go.ncsu.edu/fred-jimenez

DEPARTMENT NOTES

Promotions



April Fogleman: Promotion from Assistant Professor to Associate Professor



Clint Stevenson: Promotion from Assistant Professor to Associate Professor

New Faculty/Staff Hires

Alexander Chouljenko: After earning his Ph.D. from the School of Nutrition and Food Sciences at Louisiana State University, he will join FBNS in January 2020 as an assistant professor specializing in seafood technology at the Center for Marine Sciences and Technology (CMAST) facility in Morehead City.

Natalie Cooke: After earning her Ph.D. in nutrition from FBNS and then serving as a Teaching Assistant Professor for 3 years, she was hired as an assistant professor and undergraduate coordinator of the nutrition program in FBNS.

Alex Ives: He is a sixth-generation dairy farmer with a passion for teaching and sharing dairy knowledge and as the Dairy Education Coordinator, he coordinates public interaction and dairy agricultural education on the Lake Wheeler farm.

Courtney Lundin: After graduating magna cum laude from Le Cordon Bleu and creating an award-winning chocolate company in Colorado, she joined the Dairy Enterprise System as the creamery manager and now focuses her culinary skills on her passion for ice cream.

Marvin Moncada: After earning his Ph.D. in food science from Louisiana State University, he has been working as a R&D food scientist and plant manager at the LSU Agricultural Center Food Incubator and will join the Kannapolis location of FBNS in February 2020 as an assistant professor specializing in plant food processing.

Muquarrab Qureshi: After 15 years as a faculty member at NC State and then serving in several roles at USDA NIFA, he joined the USDA-ARS Food Science Research Unit housed in Schaub Hall as their research leader.

Fernanda Santos: After earning her Ph.D. in poultry science at NC State and working for over a decade as a researcher and instructor in Brazil and Florida, she joined FBNS as a teaching assistant professor to teach courses in food science.

Nicola Singletary: With a background in teaching in the K-12 setting and a Ph.D. in nutrition from FBNS, she joined the department to teach online courses and manage the online IBCLC training courses.

Pam Van Emden: After almost a decade of exemplary service with NC State's Department of Registration and Records, Ms. Pam Van Emden joined FBNS as the new Administrative Support Specialist for the Undergraduate and Graduate Nutrition programs.

Haotian Zheng: After earning his Ph.D. in dairy science and technology from the University of Otago in New Zealand and then serving as an assistant professor in Dairy Foods Manufacturing in the Animal Science Department at Cal Poly, he will be joining FBNS as an assistant professor in the area of food chemistry in January 2020.

Retirements

Sarah Ash, professor, nutrition: Retired after 31 years of service at NC State

Judy Cooper, administrative support specialist for nutrition: Retired after 33 years of service at NC State

Allen Foegeding, professor, food chemistry: Retired after 37 years of service at NC State

Den Truong, research leader, USDA-ARS: Retired after 26 years of service at NC State and USDA-ARS

Faculty and Staff Awards and Honors

Mario Ferruzzi was named a David H. Murdock Distinguished Professor effective June 1, 2019. This is a testament of his achievements and success at NC State. In addition to his success as a researcher and prolific international collaborator, he has been instrumental in creating collaborations between the Kannapolis campus and main campus in Raleigh.



Rodolphe Barrangou was elected to the National Academy of Engineering (NAE), one of the world's top engineering societies. This is one of the highest honors bestowed upon an engineer. In 2018, Barrangou was elected to the National Academy of Sciences (NAS), one of the world's most important and influential scientific societies. It is very rare to be elected to both organizations. In recognition of these accomplishments, the department hosted a celebration at Schaub Hall.

Josip Simunovic was elected as an IFT Fellow. Election as an IFT Fellow is a unique professional distinction conferred for outstanding and extraordinary contributions in the field of food science and technology. IFT recognized him at the awards celebration event at the Annual IFT Meeting on June 2 in New Orleans, Louisiana.

Mario Ferruzzi received the Leveille Award and Lecture for 2019 by ASN/IFT (a joint award with the American Society for Nutrition awarded by IFT). This award recognizes outstanding research and public service in nutrition and food science over five years or more. The award was presented during ASN's Nutricon 2019 meeting on June 10 in Baltimore, Maryland.

Clint Stevenson was selected as a university-level recipient of the 2019 Outstanding Teacher Award and will become a member of the Academy of Outstanding Teachers for the duration of his faculty appointment.

Congratulations to **Suzie Goodell** and FBNS alumna (and associate professor at East Carolina University) **Virginia Stage!** Goodell serves as the Co-I to Stage's Sciences Education Partnership Award (SEPA). The National Institute of General Medical Sciences (NIGMS) at the National Institutes of Health (NIH) funded (at \$1.3 million) the project "More Peas Please!

Building a Partnership for Science Education with Teachers and Underrepresented Minority Preschool Children." Over the next five years, Goodell, Stage and team will work to improve science education in the context of health in Head Start classrooms across North Carolina through hands-on learning experiences for teachers and preschool-aged children. The project will use the expertise of researchers at North Carolina State University, East Carolina University, North Carolina A&T State University and UNC Greensboro.

Student Awards and Honors

Artisanal charcuterie crafted at FBNS won international recognition at the DFV-AAMP Quality Competition for Sausage and Ham on Jan. 21-25, 2019, in Madison, Wisconsin. **Dana Hanson** and FBNS graduate student **Juan Ascencio** received certificates and medals at the awards ceremony of IFFA (the world's largest meat industry trade fair) in Frankfurt on May 7. Along with these awards, NC State received the Cup of Honor for special achievements for winning five or more gold medals.

Daphne Weikart, a graduating senior and undergraduate researcher in Keith Harris's lab, received the College of Agriculture and Life Sciences Senior Award for Outstanding Research on April 17, 2019.

Brandon Carter received the DFA Cares Scholarship. This scholarship is awarded for outstanding research and scholarship in dairy foods.

Will Harwood received the 2018 Institute for Perception Award. This award is for exception scholarship and research in sensory sciences.

Heather Keefer, Meichen Pan, Rachel Del Toro-Gipson, Savana Everhart, Lindsey Doring, Daphne Weikart, and Helen Glazunov were inducted as new members of Phi Tau Sigma.

Congratulations to the following students for winning various awards at the Annual IFT meeting: **Heather Keefer**, third place, Sensory Evaluation Division, poster competition; **Sarah Nishku**, second place, Sensory Evaluation Division, oral competition; **Peter Rizzo**, first place, Dairy Foods Division, oral competition; **Lauren Sipple**, third place, Dairy Foods Division, oral competition; **Rachel Del Toro-Gipson**, second place, Dairy Foods Division, poster

competition; and **Karen Zhai**, first place, Fruit and Vegetable Division, poster competition.

The "Cookies & 'Cotta" product from FBNS won the 2019 National Dairy Council (NDC) Product Development competition at this year's American Dairy Science Association (ADSA) meeting. Congratulations to the enterprising team of **Jennifer Fideler, Katharine Clark, Peter Rizzo and Jonathan Strum** for putting together an outstanding product.

Hibah Alsulami, one of Professor Goodell's Ph.D. students, was the winner of the Nutrition Education for Children Division Student Research Poster Competition at the Society for Nutrition Education and Behavior Conference in Orlando, Florida.

Congratulations to the fall 2018 and spring 2019 graduates from FBNS! The graduation events were live-streamed so that proud parents across the country and world could watch it. We also met some of the parents of our graduates the day before commencement during our "Meet and Greet" event at Schaub Hall.

We had **54 fall 2018 graduates** (41 undergraduate students – 11 food science, four bioprocessing science and 26 nutrition; 14 graduate students – one MR in food science, four MR in nutrition and six M.S. in food science).

We had **102 spring 2019 graduates** (82 undergraduate students – 13 food science, 15 bioprocessing science and 54 nutrition; and 20 graduate students – six MR in food science, three MR in nutrition, four M.S. in food science, one M.S. in nutrition, four Ph.D. in food science and two Ph.D. in functional genomics).

The Food Science Club at NC State hosted the IFTSA Central Atlantic Area Meeting on April 13. Teams from NC State, University of Delaware, Penn State, Virginia Tech and University of Maryland competed in the College Bowl. NC State won with Food Science Club team members **Jenn Fideler, Sarah von Schmeling, Jonathan Strum, Daphne Weikart and Sarah Yang**.

Alumni Awards and Honors

Prabhat Kumar won the FBNS outstanding alumnus award. He is the senior manager of private brands product development at Walmart.

Ali McDaniel Hill won the FBNS outstanding young alumna award. She is the director of sales for Golden Peanut and Tree Nuts.

Montana Wagner-Gillespie, an FBNS graduate, was featured on WRAL for her work with the only non-profit milk bank within NC.



FBNS Awards Banquet 2019

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