



Food Science News

Department of Food Science

Department Head Update

Dear Friends of Food Science,

We are clearly back to our “pre-COVID” schedule because the fall semester flew by, and amazingly it’s already December. Finals just ended, grades are in, and Fall graduation was last weekend. Phew!

This academic year saw our updated undergraduate curriculum fully launched. Major changes include a requirement for all students to take “Sensory Evaluation of Foods” (FDSC 404), “Food Laws and Regulations” (FDSC 417), and “Food Innovation and Product Design” (FDSC 450). These additions to the program were made in response to suggestions we received over several years from alumni and employers, and we are confident the changes will prepare our students to be successful in their careers.

In addition to the new required courses, two other courses were developed for our undergraduate program and launched this last year. “Careers in Food Science” (FDSC 175), previously taught three times experimentally, is designed to teach students resume and cover letter writing, efficient use of social media platforms like LinkedIn, and how to prepare for an interview. In addition, the course brings back recent and “seasoned” alumni of the Food Science program to talk about their careers in Operations, Quality, Research and Development, Extension, Government (FDA), and Trade Associations. These speakers provide students with a view of the breadth of opportunities for graduates with degrees in Food Science and help to guide their supporting course work. The students really appreciate connecting with our alumni.

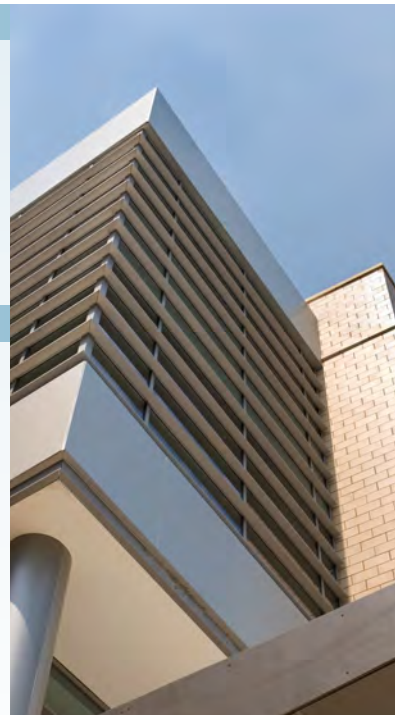
The other course launched this fall was “Understanding Science through Wine, Bread and Beer” (FDSC 223), developed by Dr. Misha Kwasniewski. Dr. Kwasniewski taught this course in a hybrid face-to-face-online format while it was being developed and this fall it was offered “fully remote” through World Campus. We congratulate Dr. Kwasniewski for getting this course launched and for being selected to receive the Anna and Guy Bixler Memorial Award in Food Science.

I am gearing up and looking forward to the 2024 Ice Cream Short Course, which will be offered for the 132nd time! The Department is looking forward to a very active spring semester.

I hope that everyone can take time to rest and recharge over the holiday season. I wish you all a safe, healthy, productive and prosperous new year.

All the best,

Bob Roberts, Professor and Head



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Study of Sourdough Starter Microbiomes to Boost Bread Quality and Safety

USDA grant to fund research that may benefit those with celiac disease



Maya Tanikawa-Brown (right) a Penn State Summer Research Opportunities Program scholar, and food science graduate student Ashley Ohstrom (left) examine sourdough fermentations. Credit: Jill Wesner/Penn Stat. All Rights Reserved.

People with celiac disease, or intolerance to dietary gluten, may soon have more food options, thanks to an unlikely source: sourdough bread. Sourdough contains less gluten than other breads, making it more tolerable for people with gluten sensitivities. Now, Penn State and Colorado State University researchers are studying whether bacteria in the yeast starter needed to make sourdough bread might help reduce gluten in other bread products.

Gluten is a protein naturally found in cereal grains such as wheat, barley and rye that can trigger an immune response in people with gluten intolerance and celiac disease. Gluten intolerances, characterized by adverse gastrointestinal symptoms upon consumption of gluten-containing food products, are estimated to affect approximately 7% of the U.S. population, according to the [National Institutes of Health](#). Of this number, 1% suffer from celiac disease. Incidence of celiac disease has increased 7.5% per year over the last several decades, mirroring a continually increasing prevalence of all autoimmune disorders worldwide.

Funded by a \$500,000 grant from the U.S. Department of Agriculture, co-principle investigators [Josephine Wee](#), Penn State assistant professor of food science, and Charlene Van Buiten, Colorado State University assistant professor of food science and human nutrition, will not only investigate if sourdough

starter microbiomes can detoxify gluten in bread products, making them safe for individuals with celiac disease, but also whether they can be selected and manipulated to boost bread quality and safety.

Conventional bread dough uses baker's yeast in place of naturally present yeast and bacteria — known as sourdough fermentation, Wee explained. Sourdough bread is made by the fermentation of dough with wild Lactobacillaceae and yeast. Sourdough bread is leavened with "starter cultures," or communities of naturally occurring bacteria and yeast that are portioned and maintained through a series of passages at room temperature. These communities are collectively known as the sourdough microbiome.

"A study of 500 sourdough starters collected from around the world showed that no two starters are exactly alike, and presently, little is known about the ability of sourdough microbiomes," Wee said. "Outcomes from this work will use whole food microbiomes to develop fermentation technologies that will address the next generation of consumer demands for high-quality 'clean label' products with reduced gluten immunogenicity."

Immunogenicity is the ability of cells or tissues to provoke an undesirable immune response. Clean label means making a product using as few ingredients as possible and making sure those ingredients are items that consumers recognize and think of as wholesome, or less processed — ingredients that consumers might use at home.

Bread production worldwide exceeds 100 million tons annually, valued at \$201 billion, according to [Custom Markets Insights](#). However, bread is also a major contributor to food waste due to spoilage or overproduction and changing consumer preferences, Wee pointed out. She added that current bread-manufacturing practices fall short in meeting demands, necessitating innovative approaches to improve quality and reduce waste.

"With combined expertise in food microbiology and nutritional biochemistry, our team is interested in characterizing the relationship between the sourdough microbiome, bread quality and gluten immunogenicity," Wee said. "We hope the findings of this research will influence functional outcomes of bread quality and safety."

Van Buiten is a Penn State alumna, graduating with a doctoral degree in food science in 2017. ([Penn State News](#))

Food Science Club Spotlight: A Community-based Program

Group is welcoming of all students and fields of study

For the members of Penn State's Food Science Club, the organization isn't just a way to share a passion for the discipline — it's a way to build their academic and professional careers.

The [Food Science Club](#) is a student-based group in the College of Agricultural Sciences composed of undergraduate and graduate students across all the colleges at Penn State. The club mainly promotes the interactions between food science students, faculty and the food industry through various events held throughout the year, but it is also an opportunity for students to advance their academic and professional careers.

Sydney McMurray, a third-year food science student and co-president of the club, said her involvement in the group started well before she enrolled at Penn State, thanks to [Christopher Sigler](#), assistant teaching professor in food science and faculty club adviser.



Penn State Food Science Club Credit: Penn State. [Creative Commons](#)

"I knew from high school that I wanted to go into food science, and my mom suggested the program at Penn State," McMurray said. "During our campus visit, Dr. Sigler was handing out free chocolate and gave me a tour of the building and told me all about the club and the major."

Sigler said he's proud of what the club has accomplished for its members.

"I am beyond impressed with how this club has provided countless internships and employment opportunities to its members," he said. "As advisers to the club, Dr. Josephine Wee and I are proud of how well they have created and fostered a family-centered culture for its members."

The Food Science Club meets once a week to discuss club business and activities. These meetings feature guest lecturers and presentations from food companies, where they host a dinner social for students as well. The club also hosts social activities like the annual Food Science Tailgate, scooping ice cream at Harvestfest in DelGrosso's Amusement Park, and career workshops, among others.

Ultimately, McMurray said, the club's goal is to help drive its members' academic and career success.

"The purpose is to connect students with their peers, their professors and potential employers," she said. "It gives them an open space to talk about the industry and discover where they want to be in the future."

McMurray said the club also values building the community, as many alumni return to talk about their careers. Because most of the speakers who come to the club's weekly meetings have graduated from Penn State's Food Science program or a related field, there is always opportunity to build connections between graduates and students, she added.

Kacie Czyszczon, a third-year student in food science and vice president of the club, has been involved with the organization since she came to Penn State, and was the social chair during her second year. She said her experience with the club has been very positive, and the group is welcoming of all students and fields of study, despite it being centered around food science.

"One of the big parts of the Food Science Club is the community it creates, and how it can bring everyone together," Czyszczon said. "We have so many activities throughout the year — like candle-making, pumpkin-painting for Halloween, decorating Valentine cookies and holiday bingo — in addition to those based on food science."

While both Czyszczon and McMurray are food science majors, Christina Giavadi is a second-year architecture student who got involved with the Food Science Club through one of its social events.

"I think the concept of food science is very interesting," Giavadi said. "I have a chronic illness that makes it so that food is medicine for me, so focusing on what I eat is very important. I feel that food science is all about understanding what goes into foods and how people react to them, so that is why I really enjoy the club!" ([continued on Page 4](#))

Food Science Club *(continued)*

While talking about the club's alumni and its connections to Penn State, Giavadi noted that she felt very supported despite not majoring in food science or being directly associated with the discipline.

"Even though I am in a different field, the network helps me in many ways," she said. "A lot of companies that come to the meetings have internship opportunities available. While most of them are food companies, they have many departments and a lot of connections that can be made for students in other majors."

In discussing the academic and professional benefits that the Food Science Club has to offer, McMurray said that speaking with alumni and learning about the kinds of opportunities that are available in this field helped her to develop confidence in what she was looking for beyond her undergraduate career.

"Many of the alumni will emphasize taking classes you don't think you are going to want but could help you somewhere in your career development," she said. "The club gives you a safe place where you don't feel like you are reaching out to strangers to ask for advice, but to people who have been exactly where you are, and they care about where you are going."

Czyszczoń also said that just speaking with other older members of the club helps provide a sense of mentorship, given that they have been involved with the Food Science program longer, and they have experience with classes and internships.

The Food Science Club meets every Monday at 5:30 p.m. in the Keeney Commons, which can be found right above the Penn State Creamery. Anyone can join and more information about the club and its mission can be found on the [organization's Instagram](#). ([Penn State News](#))

Kovac and LaBorde Receive Integrated Team Award

[Dr. Jasna Kovac](#), Lester Earl and Veronica Casida Career Development Professor of Food Safety and associate professor of food science, and [Dr. Luke LaBorde](#), professor of food science and extension specialist in produce food safety received the Integrated Team Award from the College of Agricultural Sciences.

This integrated team tackled challenges posed by *Listeria* contamination in apples, which is a significant threat to the apple industry in Pennsylvania, the fourth-largest apple-producing state in the U.S. Collaborating with the state's tree fruit industry, Kovac and LaBorde assessed the issue's scope and devised effective cleaning and sanitation protocols and industry personnel training.

[Full Article... \(Penn State News\)](#)



Penn State Research Award Ceremony hosted by the College of Agricultural Sciences. Credit: Kaiyi Chan / Penn State. [Creative Commons](#)



Dr. Misha Kwasniewski, PhD

Kwasniewski Receives Anna and Guy Bixler Memorial Award in Food Science

[Dr. Misha Kwasniewski](#), Assistant Research Professor, has been selected as the recipient of the **2023** Anna and Guy Bixler Memorial Award in Food Science. This award is to honor "outstanding teaching and/or outstanding teaching innovation by a faculty member in the Food Science Department." Dr. Kwasniewski received the award for his course FDSC 233 "Understanding Science Through Wine Beer and Bread." His work piloting this course as a hybrid online-face-to-face offering was well thought through and his perseverance in developing this as an online course and shepherding its approval as a general science course and launching it through World Campus is appreciated.

In addition, Dr. Kwasniewski developed a new and practical hands-on chromatography course for graduate students.

Honors and Awards

Tenure and Promotion

Dr. Jasna Kovac, Promoted to rank of Associate Professor of Food Science

Allegheny Branch, American Society of Microbiology (ABASM)

Ashley Oshstrom - 1st Place Graduate Student Poster Presentation, Title: "Starter to Slice: Characterizing the Sourdough Microbiome and Its Influence on Bread Quality and Nutrition," Oshstrom, A. M. (Penn State), Clark, C. (Colorado State University), Keohane, E. (Colorado State University), Prenni, J. (Colorado State University), Van Buiten, C. (Colorado State University), Kovac, J. (Penn State), & Wee, J. (Co-Author, Penn State). (2023).

Jacob Simmons - 2nd Place Undergraduate Poster Presentation, Title: "Is chemical pre-treatment of LDPE necessary to accelerate fungal degradation of plastic?" Simmons, J. (Penn State, University Park), Eshbaugh, M. (Penn State, Behrend), Semler, S. (Penn State, Behrend), Mendis, G. (Penn State, Behrend), Aronne, L. (Penn State, Behrend), Wee, J. (Penn State, University Park). (2023).

National Association of Flavors and Food-Ingredient Systems (NAFFS) Scholarships

Tyler Yany
Mackenna Yount
Catherine Eisenhut

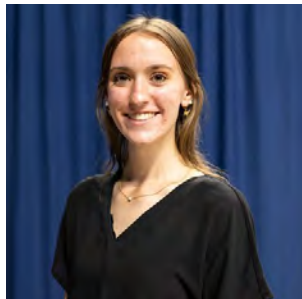
The Carolee Bull Leadership Award

Taejung Chung

Virginia Dare Award

Lauren Wolf

2023-2024 Keystone IFT Scholarship Recipients



Kailee Shotto (*left*) is a senior and a member of the Food Science Club and the Brew Club. She completed an internship at Martin's Famous Pastry Shoppe. She is also an active volunteer in her community and at Penn State.



Maddy Denlinger (*right*) is a senior and a member of the Food Science Club as well as the Dairy Science Club where she is the chair of the cheese box sale committee. She completed an internship with the Pennsylvania Department of Agriculture as a Food Quality Inspector.

2023 Food Industry Group Student Leadership Awards



Laura Taraboletti
Judith A Williams Food Industry
Group Undergraduate Award



Tyler Chandross-Cohen
Food Industry Group
Graduate Award

Building a Bridge Builds our Team



In August 2023, members of the Administrative Staff in Food Science traveled to Shaver's Creek for a teambuilding day with Chris Heinz of [Chris Heinz Co.](#), and staff of [Shaver's Creek Environmental Center](#). The morning session was spent diving deeper into the Enneagram process which identifies 9 personality types and ways that those types can best work together and understand each other. The afternoon session was teambuilding exercises created by staff at Shaver's Creek with the intention of having the entire group work as a team to successfully complete each task. These sessions are a great way to spend a day off campus at a remote location like Shaver's Creek and take time to build a more connected team among the administrative staff. The Food Science Staff have participated in team building programs for 5 years as part of their professional development plan in support of the department's strategic goals.

"No challenge is too difficult, but this one almost got us"

Food Science Administrative Staff, (kneeling) Tom Dimick, (from left to right) Beth Tepsic, Karen Mullen, Chris Andrus, Suzy Watson, Jodi Butler, and Pete Hanchar.

Bababode Kehinde joins Department as Pilot Plant Manager



Bababode Kehinde, PhD

[Bababode Kehinde](#) (Ph.D.) joined the Department of Food Science as the new Pilot Plant Manager/ Research Technologist in October. His responsibilities include managing logistics for the renowned [Ice Cream Short Course](#), managing the pilot plants, conducting research, and assisting faculties in their teaching and research duties associated with the pilot plant.

Bababode is originally from Nigeria where he attended LAUTECH and graduated with a bachelor's degree in Food Engineering in February 2015. He proceeded to LPU-India for his master's degree in Food Science and Technology in 2017 and joined University of Kentucky for his doctorate in Biosystems Engineering (Food and Bioprocessing option) 2020. He worked as a Research Technologist-1 at the food pilot plant of the University of Nebraska-Lincoln before joining PSU.

In his free time, Bababode loves exploring new ideas and having philosophical and intellectual discussions with people.

Annual Tailgate Highlights

The annual Food Science Tailgate was held on Oct 28, 2023, with cloudy and mild weather hovering over Happy Valley. Alumni, friends, faculty, staff, students, and their families came together to enjoy one another's company and to support the Department of Food Science at the annual tailgate held inside the Food Science Building.

Approximately 150 guests attended this year's event, co-sponsored by the [Food Science Department](#), the Penn State [Food Industry Group](#), and the [Food Science Club](#). The day's activities included the Food Industry Group board meeting and presentation of the Food Industry Group Student Leadership Award, followed by a tailgate brunch with excellent food prepared by the Food Science Club. A silent auction was held to support the Food Industry Group International Travel Endowment which supports student travel and activities. Participants headed to Beaver Stadium for a noon kickoff and win against the Indiana Hoosiers, 33-24.

A special Thank You to everyone who supported the event!

Fall Undergraduate Class, 2023

Elizabeth Henry
Laura Taraboletti

Fall MS and PhD Graduates, 2023



Taejung Chung, PhD

Thesis title: *Comparative Genomic and Phenotypic Analysis of Bacillus Cereus Senu Stricto Biovar Thuringiensis and Non-Thuringiensis.*
(Advisor – Jasna Kovac)



Elizabeth Esayev, MS

Thesis title: *Evaluation of Olfactory Function in Healthy Individuals Using the Adaptive Olfactory Measure of Threshold (ArOMa-T) Test.*
(Advisor – John Hayes)



Lisa Tin, MS

Thesis title: *The Characterization of Non-Saccharomyces Yeast to Reduce Ethanol Levels in Chambourcin Wine.*
(Advisor – Josephine Wee)

Congratulations!

Upcoming Events

January 7-13 [Ice Cream Short Course](#), University Park, PA
26-28 [Ice Cream 101, Introduction to Frozen Desserts](#), University Park, PA

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Get Involved!



Join the Penn State [Food Industry Group](#)

Update Your Alumni Information

Updating your information with the Alumni Association is now easier than ever. You can change your home address, work address, e-mail address, and other information online at the Penn State Alumni website. Or you may also contact the Alumni Records staff directly.

Web: [Record Update Form](#)

Phone: 800-548-LION (5466), option 2

Mail: Penn State Alumni Association
Alumni Data Access & Services
Department B
Hintz Family Alumni Center
University Park, PA 16802



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