



# Food Science News

Department of Food Science

## Department Head Update

Dear Friends of Food Science,

Today, Friday December 10<sup>th</sup>, is the last day of classes for fall semester 2021. As students prepare for final exams and the semester and year come to a close, it seems like a good time for a Food Science update.

Beginning in June, onsite short courses resumed in the Department after a break that began in March of 2020. Pent-up demand for our courses has led to high, in some cases record-high, attendance. It is gratifying to know our offerings were missed!

While it wasn't quite a "normal" fall semester, Penn State returned to face-to-face (well, mask-to-mask) teaching with our teaching labs, classrooms and pilot plants fully engaged. Students and faculty were clearly pleased to be back in the classroom and able to interact with each other. Student clubs were also active, and campus had the energy it normally does during the academic year. Although football resumed, we had hoped to have a Food Science Tailgate. However, after much internal and external discussion, we chose to delay. We very much look forward to seeing you in 2022.

This fall it was a pleasure hosting Joe Light and Skip Roskam on campus to be honored as Outstanding Alumnus of the College of Agricultural Sciences and Honorary Alumnus of Penn State, respectively. More details on this and other awards received by students, staff and faculty are contained in the pages that follow.

In breaking news, Penn State has announced that the new president of the University will be [Dr. Neeli Bendapudi](#). We look forward to welcoming the new president to campus when she begins her tenure as the 19<sup>th</sup> president of Penn State on July 1, 2022.

As 2021 comes to a close, I wish you and your families a wonderful holiday season and a happy, healthy and productive 2022.

All the best,

Bob Roberts, Professor and Head



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## 'Sweet' Scholarship takes Penn State Food Science Student to Austria

Aaron Wiedemer, a senior majoring in food science in Penn State's [College of Agricultural Sciences](#), has an envious area of study: chocolate. He will be taking his research abroad in fall 2021 with the help of the [Marshall Plan Scholarship](#).

The Marshall Plan Scholarship is designed for students working on part of their bachelor's or master's degree thesis. Students enrolled in any American university are eligible to apply.

"I've always wanted to study abroad, but obviously the pandemic changed my plans," Wiedemer said. "I'm over the moon to have the chance to go now."

Wiedemer, a Schreyer Honors College scholar who also is completing a minor in jazz performance, will study at Graz University of Technology in Austria.

His adviser, [Helene Hopfer](#), Rasmussen Career Development Professor in [Food Science](#), was instrumental in helping him find the scholarship. He explained that Graz University is Hopfer's alma mater.

"In study abroad experiences, you have to adjust to a new environment, and sometimes that requires you to adjust your preconceived notions and beliefs, so you learn a lot about yourself," said Hopfer. "I encourage all my students to think about undergraduate research because it allows you to apply concepts you've learned in class to real-world questions and encourages critical thinking. This scholarship was a perfect fit for Aaron because it supported his research and helped with the financial aspects of studying abroad."

Wiedemer started in undergraduate research during his first year at Penn State. In Austria, he will focus on his honors thesis. He studies chocolate flavor chemistry using gas chromatography, specifically cross-modal interactions with bitterness and astringency in chocolate.

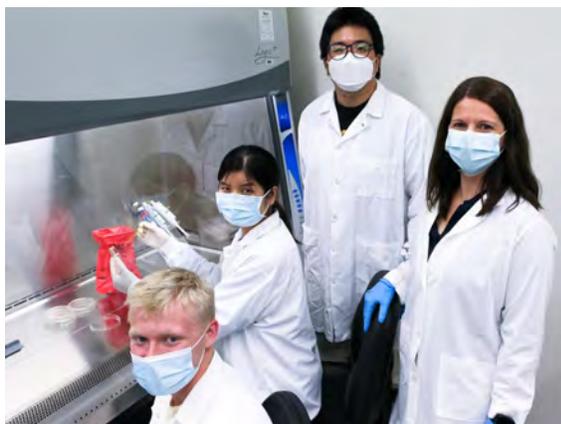
"Cross-modal interactions are caused when you taste or smell something, and you perceive the taste or smell to be different than it actually is," he said. ([Penn State News](#))



*Aaron Wiedemer,  
Senior in Food Science*

## Penn State Researchers Developing Genomic Resources to Identify Novel Pathogens

*Study to enhance CDC's capacity to rapidly detect emerging infectious disease agents*



*The research team (from left): Grant Harm, undergraduate research assistant; Xiaoyuan Wei, postdoctoral scholar; Taejung Chung, doctoral student; and Jasna Kovac, assistant professor of food science.*

**Credit: Erin Sullivan**

To enhance the early detection of novel infectious bacteria that could cause outbreaks of infectious disease and public health emergencies, a team of researchers in Penn State's [College of Agricultural Sciences](#) will sequence the genomes of 700 Bacilli bacteria — near relatives of the bioterror pathogen that causes anthrax.

Funded by a \$1.2 million grant from the U.S. Centers for Disease Control and Prevention, the research will support the development of genomic resources and DNA sequence databases for the federal agency to increase its capacity for rapidly detecting novel pathogens, according to team leader [Jasna Kovac](#), assistant professor of food science and Lester Earl and Veronica Casida Career Development Professor of Food Safety.

"You may have heard of the 2001 bioterrorist attacks in which spores of the bacteria *Bacillus anthracis* that cause anthrax were circulated in the mail," she said. "People who inhale these spores can get sick with anthrax, which is often fatal."

From a biodefense standpoint, it is important to understand the diversity of environmental Bacilli that could become novel bioterror threats such as anthrax, added Kovac, who has extensive experience with the genomics of Bacilli.

"There are known examples among *Bacillus cereus* group bacteria where 'benign' environmental strains have acquired anthrax-causing capabilities," she said. "We are interested in detecting and characterizing similar strains of Bacilli that have both the characteristics of known bioterror threats and harmless environmental microorganisms." ([Penn State News](#))

## Penn State's Department of Food Science, Discovery Space Partner on Outreach

Undergraduate students participating in a summer internship opportunity through Penn State's [Department of Food Science](#) recently co-led the "On Deck Genetic Tech" program at State College's Discovery Space of Central Pennsylvania.

The two students, who were part of the U.S. Department of Agriculture-sponsored Research and Extension Experiential Learning for Undergraduate Fellowships program, spent several weeks at the University Park campus learning about food microbiology.

Community outreach in science communication also was an important component of their education, noted [Josephine Wee](#), assistant professor of food science in the [College of Agricultural Sciences](#) and a program director for the undergraduate fellowship program.

Wee coordinated the outreach visit to Discovery Space, a children's museum and learning center, with support from food science faculty members Ed Dudley, Jasna Kovac, Darrell Cockburn, Jonathan Campbell, and Chris Sigler.

"The internship program, called 'Bugs in my Food,' focused on giving undergraduates a chance to perform research in food microbiology," Wee said. "The partnership with Discovery Space was an excellent opportunity for our interns to gain some experience in communicating science efficiently across different audiences."

At Discovery Space, the interns, Emma Medlock, a rising sophomore at Juniata College in Huntingdon, and Kerely Lorenzo, a rising junior at the University of Puerto Rico, worked with graduate students from the Department of Food Science to teach gel electrophoresis techniques to campers between the ages of 10 and 14.

"Gel electrophoresis is basically a way of separating and analyzing DNA fragments based on their size and charge," said Medlock. "We knew that we would be talking to kids who don't really know what DNA is, so we made sure to create a demonstration that would help them understand it."

Using demonstration units provided by Thermo Fisher Scientific, Medlock, Lorenzo and the graduate students set up four learning stations that the campers rotated through. At the stations, the youths learned the answers to basic questions: How do we analyze DNA? What can you do with this technology? What are the principles behind that technology? What are potential careers in DNA technology? The outreach was a great success, according to Lorenzo. "These kids were brilliant," he said. "They were so smart, and they just wanted to learn. I enjoyed teaching them some of the skills we've gained."

Medlock concurred, adding, "We had a lot of fun making the demonstrations and running them with the kids."

As USDA Research and Extension Experiential Learning for Undergraduate Fellowships interns, Medlock is researching the ability of wild yeast to consume various sugars, and Lorenzo is studying potential yeast probiotics. Both see a place for science communication in their respective futures.

Lorenzo, who plans to pursue a medical degree, said effective outreach skills will serve her well as a doctor: "Patients don't have the same knowledge base as doctors, so these communication skills are super important."

Though Medlock is unsure what she will do after she completes her bachelor's degree, she agreed that scientists need to know how to communicate with non-scientists. "If we can show non-scientists how they can experience and understand science, they will be able to apply it to and improve their own lives," she said.

USDA's National Institute of Food and Agriculture recruits 10 students each summer from undergraduate-centric institutions in Pennsylvania and from the University of Puerto Rico-Aguadilla for its Research and Extension Experiential Learning for Undergraduate Fellowships program. For more information about the program in Penn State's Department of Food Science, contact Ed Dudley at [egd100@psu.edu](mailto:egd100@psu.edu). ([Penn State News](#))



*Josephine Wee, Sharon Nieves-Miranda, Emma Medlock, Kerely Lorenzo, Andrea Miranda-Perez, Kiana Coleman, Laura Aston, Alayna Faison, Tara Pickens, Brittani Bedford and Peter DeMartino. Credit: Discovery Space*

# Keeping Chocolate Milk Smooth, Stable without Carrageenan

*Unique high-pressure jet processing of chocolate milk may reduce the use of the controversial emulsifier*

Fat-free chocolate milk processed for the first time with high-pressure jet technology exhibits enhanced viscosity, stabilizing cocoa particles in the fluid and eliminating the need for adding a controversial emulsifier.

That's the conclusion of a team of Penn State researchers, whose study suggests that the new technology can preclude the use of carrageenan in chocolate milk. The widely used food additive — which helps keep the liquid smooth and well-mixed even after days sitting on a store shelf — is not desired by many consumers, especially in organic chocolate milk.

Although the U.S. Food and Drug Administration has approved the use of carrageenan, concerns about its safety remain, according to team leader [Federico Harte](#), professor of food science. He noted that some scientists believe that the additive — a compound extracted from red seaweed — can cause inflammation and digestive problems such as bloating and irritable bowel disease. As a result, the additive is banned in infant formula in the European Union.

"This research is not about being against carrageenan — it's about consumers wanting clean food labels with only ingredients they recognize," he said. "And carrageenan definitely is not something they want in chocolate milk. We know that USDA has considered banning it for organic chocolate milks. Our results indicate that would be possible."

In the study, researchers thermally treated fat-free chocolate milk formulations containing skim milk, cocoa powder, and sugar and then processed them using high-pressure jet technology from 125 to 500 megapascals. The viscosity, flow properties, and stability of chocolate milks treated with high-pressure jets were compared with chocolate milks that did not undergo high-pressure jet processing, prepared both with and without adding carrageenan.

As expected, carrageenan-free chocolate milk exhibited immediate phase separation of the cocoa powder, whereas formulations containing carrageenan were stable for 14 days, with cocoa particles not dropping out of suspension. However, the researchers observed increased stability with increasing jet processing pressure, with maximum stability achieved when chocolate milk was processed at 500 megapascals.

"We believe that structural changes in casein micelles — a kind of milk protein — and new casein-cocoa interactions induced by high-pressure jet processing increased cocoa stability in the chocolate milk," Harte said. "Because milk protein seemed to be the major component enhancing cocoa stability in samples treated with this method, we conducted a second study to determine the effect of additional milk protein and high-pressure jet processing on the stability of fat-free chocolate milk." ([Penn State News](#))



*Credit: GettyImages Dimitriosfos*

## Staff Profile

### Leitch joins Sensory Evaluation Center

[Alicia Leitch](#) joined the [Sensory Evaluation Center](#) in the Department of Food Science as the new Sensory Coordinator on August 1, 2021. Her responsibilities include the day-to-day running of the SEC, overseeing undergraduate employees, working with researchers and clients to prepare sensory tests, and assisting with data collection, analysis, and reporting. She looks forward to working with faculty, graduate students, and industry clients and contributing to sensory science.

Alicia is a Happy Valley native who received her Bachelor's degree in Dietetics from Indiana University of Pennsylvania followed by her Master's degree in Food, Family, and Community Health Sciences with an emphasis on Sustainable Food Systems from Montana State University. Alicia's research ranges from portion size susceptibility to nutrient density and eventually to food waste reduction methods including the implantation and analysis of a university food waste composting system. Alicia enjoys sensory evaluation because of its diversity as well as the unique insights it provides into consumer perceptions.

In her spare time, Alicia can be found in the mountains trail running and hiking with her dog, Kimber. She also loves to cook and has never seen a food truck she wasn't excited about.



*Alicia Leitch,  
Sensory Coordinator*

## Alumni Awards

### Joseph Light Receives College of Agricultural Sciences Alumni Society Outstanding Alumni Award



*Joseph Light*

Joseph Light, who earned a bachelor's degree in food science in 1987, was honored as an Outstanding Alumni by Penn State's College of Agricultural Sciences.

Joe was the vice president of global development/ingredient technology at Ingredion Inc., a global leader in food ingredients. He currently serves as an adviser for multiple food technology companies. Light's responsibilities spanned five regions and 29 innovation centers. He built capabilities recognized industry-wide in food formulation, including the Inside Idea Labs' virtual lab, which enables those in the food and beverages industry to partner with Ingredion experts.

An expert on food texture, he spearheaded efforts to build texture and sweetness centers of excellence, which are focused on linking innovative technology approaches to yield consumer-preferred products. He is an inventor on 11 patents.

Light was a founding member of the Institute of Food Technologists' IFTNEXT Think Tank and serves on the IFT Feeding Tomorrow board of trustees and the IFT Annual Meeting scientific program task force.

The award recognizes the alumni for their outstanding professional achievements. ([Penn State News](#))

### Skip Rosskam Named Honorary Alumnus by Penn State's Alumni Association



*Marilyn and Skip Rosskam*

Skip Rosskam was honored as a 2021 Honorary Alumnus by Penn State's alumni Association. Skip has been a long-time supporter and instructor in the Penn State Ice Cream Short Course over several decades. He was also a member of the CoAS Entrepreneurship and Innovation Advisory Board. In addition to being generous with his time, Skip and Marilyn created the Rosskam Graduate fellowship in food science to support graduate student studies.

The Alumni Association's Honorary Alumni Program was created to recognize outstanding individuals who, though not graduates of Penn State, greatly enhance the University through their commitment and service.

## Faculty and Staff Awards

### Chiles recipient of 2021 Roy C. Buck Award



*Robert Chiles*

[Dr. Robert Chiles](#) was recently honored as the 2021 Roy C. Buck Faculty Award recipient. This endowed award honors and recognizes an untenured, tenure-track faculty member in the College of Agricultural Sciences, whose research involves the social or human sciences, for the best refereed article published in a scholarly journal in the previous two years. Dr. Chiles received the award for his publication "Democratizing Ownership and Participation in the 4th Industrial Revolution: Challenges and Opportunities in Cellular Agriculture," a forthcoming publication in Agriculture and Human Values, examined the emergence of the "Fourth Industrial Revolution."

([Penn State News](#))

## Faculty and Staff Awards, cont.

### Wee Recipient of Anna And Guy Bixler Memorial Award in Food Science



Josephine Wee

[Dr. Josephine Wee](#), assistant professor in Food Science, is the recipient of the 20/21 “Anna and Guy Bixler Memorial Award in Food Science.” The fundamental purpose of the “Bixler” award is to “honor and recognize outstanding teaching and/or teaching innovation by a faculty member in the Department of Food Science.”

Dr. Wee is a dedicated, innovative and effective teacher. She has developed or redeveloped and taught multiple courses including Communicating Research in Agricultural Science (FDSC 422), Food Law (FDSC 497), Freshman Seminar in Food Science (FDSC 150S), Food Mycology, Food Product Development (FDSC 497) - and an online Food Defense course (FDSC/AGBIO 521).

Outside the classroom, Dr. Wee has been active as an adviser with the Food Science Club, was a leader in development of the first Food Science Leadership Academy, and was instrumental to development of the Food Science Buddy program.

### Tepsic Honored with Ella Reagle Staff Assistant Award

[Beth Tepsic](#), Manager of Departmental Operations in the department of Food Science was selected as the 2021 Ella Reagle Staff Assistant Award recipient.

The Ella Reagle Staff Assistant Award was established to honor Ella Reagle, who was hired in August 1962 and served the College of Agricultural Sciences and Extension for thirty years. Ella was admired and respected for her integrity and her commitment to her job. An excellent role model and mentor, she passed away in November 1998.

The Ella Reagle Staff Assistant Award is an annual award presented by the College of Agricultural Sciences to recognize and honor staff assistants who have demonstrated dedication and commitment to the College of Agricultural Sciences and their work unit.

Recommendations from numerous faculty and staff demonstrate the many ways in which Beth exhibits the attributes modeled by Ella Reagle.



Beth Tepsic

*“She has the rare ability to be able to juggle departmental duties and the responsibility for leading staff with patience, professionalism, and respect for everyone.”*

## Student Awards

**Jennifer Goza** – 1<sup>st</sup> place poster award at the 16<sup>th</sup> Weuman Flavour Research Symposium.

**Jennifer Goza** – 2021 Food Industry Group Graduate Student Leadership Award.

**Leah Bodinger** – 2021 Judith A. Williams Food Industry Group Undergraduate Leadership Award.

**Alayna Faison** – 1st place, Elevator Pitch Contest, Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS).

**Kayla Finkelstein, Yvonne Longenecker**, and the Food Science Leadership Team of **Sarah Olson, Leah Bodinger, Leah Ward, Chris Talarico, Katelyn Feaster, Sabrina Yushinski, Rebecca Cimino, Avery Geiger, Samantha Moorehead**, and **Kayla Finkelstein**, The National Association of Flavors and Food-Ingredient Systems (NAFFS) Student Awards.

**Tyler Chandross-Cohen** – 2021 Virginia Dare Award.

## PhD and MS Graduates, Summer 2021



*David Goulder, MS*

Thesis title: *Prevention of Low Temperature Gelation in Milk Protein Concentrates*  
(Advisor – Federico Harte)



*Isabel Gutierrez, MS*

Thesis title: *Phytochemical composition and bioactivity of clove (*Syzygium aromaticum*) oil and post-distillation biomass extract.* (Advisor – Josh Lambert)



*Alden Riak, MS*

Thesis title: *Synergistic And Antagonistic Ingredient Interactions As A Sugar Reduction Strategy In Chocolate Milk.*  
(Advisor – Helene Hopfer)



*Pricilla Sinclair, MS*

Thesis title: *The Influence of Environmental Microbiota in the Control of *L. monocytogenes*.*  
(Advisors – Luke LaBorde and Jasna Kovac)



*Grace Voronin, Ph.D.*

Thesis title: *High-pressure jet processing to functionalize the protein and fat components of dairy foods.*  
(Advisor – Federico Harte)

### Contact Information

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**Giving to the Food  
Science Department go to:**  
[GiveTo.psu.edu/FoodScience](http://GiveTo.psu.edu/FoodScience)

## Upcoming Events

January	9-15	<a href="#">Ice Cream Short Course</a> , University Park, PA
	25-27	<a href="#">Preventive Controls for Human Foods</a> , Pittsburgh, PA
	28-30	<a href="#">Ice Cream 101, Introduction to Frozen Desserts</a> , University Park, PA
March	6-11	<a href="#">Ice Cream Short Course</a> , University Park, PA
	14-25	<a href="#">Better Process Control School</a> , Virtual
	29-31	<a href="#">Preventive Controls for Human Foods</a> , Glenn Mills, PA
April	19-21	<a href="#">Penn State-Ingredient Plant Based Yogurt Alternative Short Course</a> , University Park, PA and Virtual
May	10-11	<a href="#">Fundamentals of HACCP</a> , University Park, PA
	17-19	<a href="#">Preventive Controls for Human Foods</a> , Pittsburgh, PA
	24-26	<a href="#">Food Microbiology Short Course</a> , University Park, PA

Penn State's College of Agricultural Sciences and Penn State Extension are closely monitoring the COVID-19 situation and its potential impact on those planning to attend university events and programs. We are following updates from [Penn State](#), the [Centers for Disease Control \(CDC\)](#) and the [Pennsylvania Department of Health](#). We encourage all participants to keep informed of risks, precautions, and symptoms to assist in making educated decisions about travel and participation in Penn State programs and events. Currently, the university has not made a decision to cancel programs or events. We will keep you updated on any such decisions, which will be made with the health and well-being of our community and event guests as the priority.

All registered attendees will be contacted in the event of cancellation. Unless you are contacted regarding cancellation, assume that university programs and events will go on as scheduled. We appreciate your understanding as we navigate this rapidly evolving situation. If you have questions or would like to change your registration status, please call 877-778-2937.

## 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 by completing the secure [record update form](#) on 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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