March 2025

Food Science Scoops

Department Edition

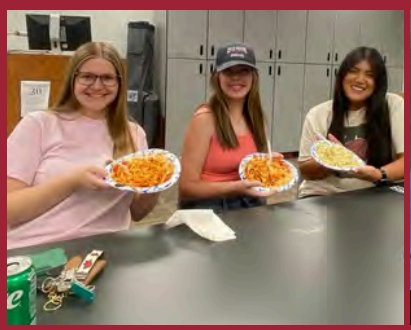
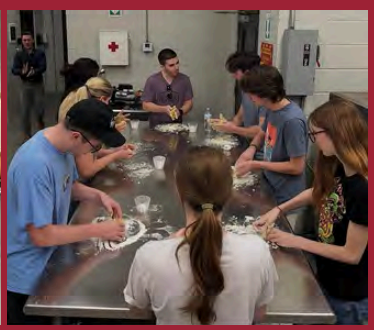



In this month's issue...

This newsletter is prepared by faculty of the Department of Food Science at the University of Arkansas System Division of Agriculture. If you have ideas for stories or individuals to highlight, news or photos to share, or would like to be added to the circulation list, please email Jennifer Acuff (jcacuff@uark.edu).

Recent Events


FDSC Club & Department Multicultural Event
The FDSC Club held a special event this month to feature the incredible multicultural backgrounds of our students, faculty, and staff. Many made or brought food that had meaning to their family or culture. Stories, history, and very delicious bites were shared, along with great

FDSC Club and Il Circolo Italiano Pasta Night
Two campus clubs combined forces and resources to learn about each others' interests and participate in a pasta making class! The FDSC and Italian Clubs met and learned how to make pasta in the Arkansas Food Innocation Center before cooking it and enjoying a meal together.

FDSC Faculty Highlight

Mahfuzur Rahman, Ph.D.

Through research and collaboration, Dr. Mahfuzur Rahman is shaping the future of food science—one grain at a time. Dr. Rahman's research focuses on enhancing the functionality and sustainability of cereal and pulse ingredients in food production. "Cereals and pulses—staples in diets worldwide—hold immense potential to meet these demands, offering high nutritional value, versatility, and environmental benefits. However, unlocking their full potential in food production is far from straightforward. Issues such as poor functionality, undesirable flavors (off-notes), limited processing efficiency, and the need for clean-label solutions continue to hinder their widespread adoption in innovative food systems."

At the Novel Ingredient Processing and Utilization (NIPU) Laboratory, Dr. Rahman and his team are tackling these challenges using cutting-edge technologies. "Our lab focuses on advanced ingredient processing techniques that push the boundaries of conventional methods. By leveraging state-of-the-art technologies such as ultrasound-assisted processing, cold plasma treatment, and fermentation, we are addressing critical issues like improving protein applicability, reducing off-flavors in plant-based proteins, and enhancing the nutritional benefit of grain-based ingredients."

Sustainability is central to this work. "Beyond ingredient functionality, the lab is also exploring ways to integrate sustainability into every step of the process. From developing biodegradable packaging materials derived from plant-based sources to creating value-added products from agricultural byproducts, our lab is committed to reducing waste and promoting circular economies in food production."

Dr. Rahman's students play a crucial role in advancing research. "Our graduate student Ruslan Galib's research focuses on harnessing the chemical composition of proteins in different rice milling by-products to develop excellent ingredients for product formulations such as vegan cheese. To do so, he has been adopting the 'dry biorefinery' concept to fractionate protein and fiber from rice bran using electricity and without any chemical and water." Another student, Sukanya Poddar, is working on clean-label solutions, identifying clean-label food additives from protein hydrolysates to reduce synthetic preservatives in food products. "[Sukanya] is connecting the dots between plant genomics and product development functionalities of soy cultivars using a bioinformatics and experimental approach."

Industry partnerships strengthen the lab's impact. "We actively collaborate with industry leaders, such as Riceland Inc. and Rice Capitol, on valorizing the enormous quantities of rice milling by-products to develop functional food ingredients. These collaborations nurture our scientific research with the industry perspective to drive us to solve real-world problems with practical solutions."

Dr. Rahman sees the next decade as transformative for food science. "Plant-based proteins will continue to be a significant focus… clean-label ingredients for food production and preservation will see significant advancements, including the development of natural preservatives from protein hydrolysates of processing by-products, which extend shelf life without compromising safety, quality, or environmental concerns."

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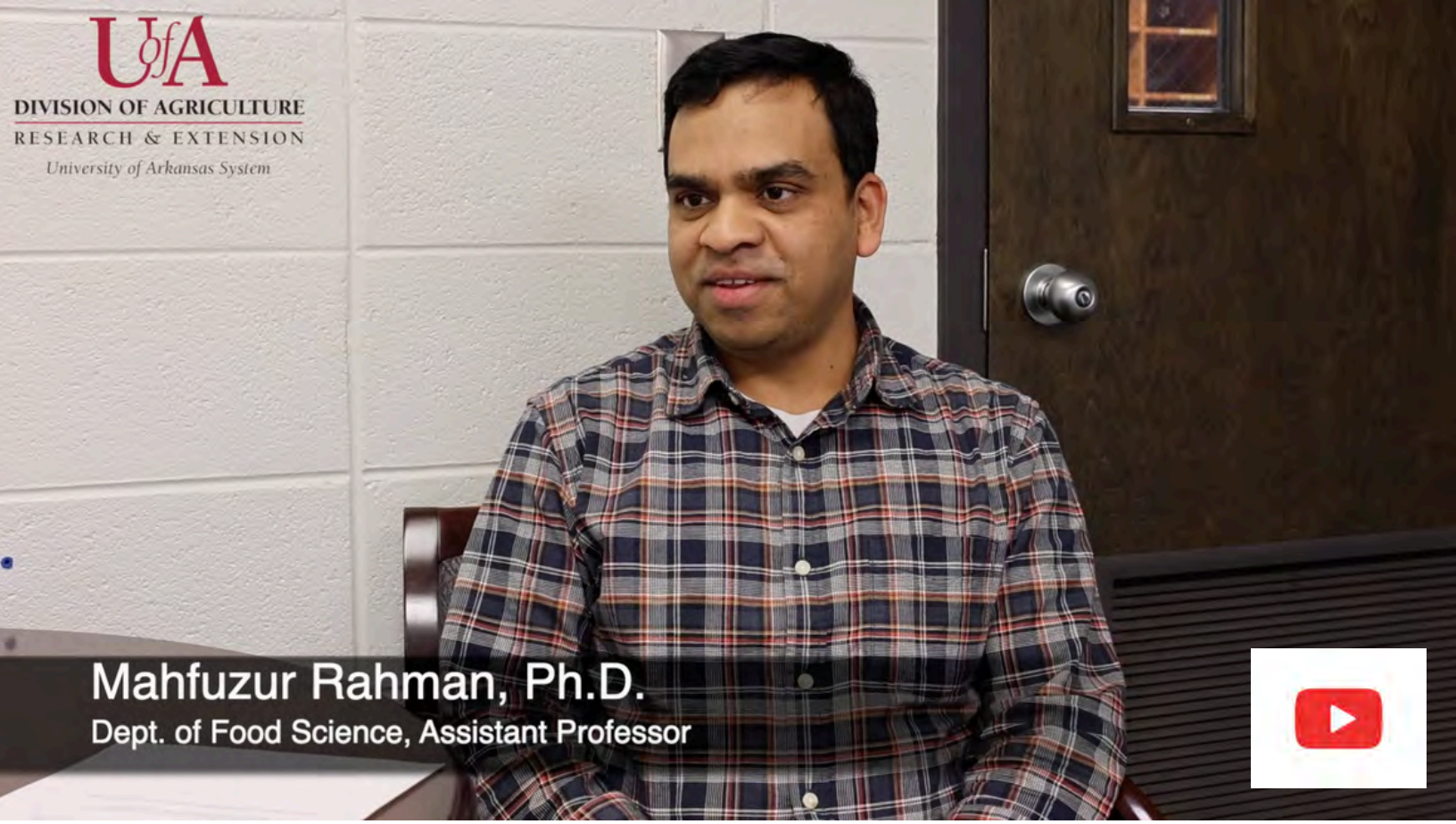

FOOD SCIENCE *Fun Fact*

What can you do with a degree in Food Science and Culinary Arts?

Have you ever eaten food made of "alternative proteins?" Or perhaps you've had a plant-based meat product like the Impossible Burger? Dr. Rahman explains some of the benefits to these food products and how they are made. Listen in for more!

FDSC Alumni Highlight

Amy Matsler, M.S.

"I SPEND MOST OF MY TIME ON RESEARCH PROJECTS WHERE I GET TO WORK WITH ANY DEPARTMENT OR CUSTOMER THAT HAS QUESTIONS WHERE I CAN DELVE INTO PROCESSES AND DATA AND PROVIDE REAL ANSWERS FOR THOSE QUESTIONS."

Amy Matsler's journey to a career in food science wasn't a straight path, but rather a series of discoveries that led her to a field she loves. Initially an education major at the University of Arkansas, she quickly realized that teaching wasn't the right fit. "I had been working for a year in a food safety lab in Poultry Science, and discovered that I enjoyed applied science a lot, but didn't want to work with chickens," she recalls. Having heard about food science through her years in 4-H, she explored the major and found guidance from Carolyn Sharp in the Department of Food Science. "[She] made this very stressful decision much less stressful and so I took her advice and switched majors and never looked back!" Over the years, Matsler spent time in QA at Riceland Foods and in Technical Services at McKee Baking (Little Debbie).

Now, as a Research Fellow in Poultry Research and Development at Simmons Prepared Foods, Matsler plays a key role in product innovation and problem-solving. "My bench top R&D work is about a third of my job for a food service customer where I develop or commercialize products for restaurants. Matsler particularly enjoys the practical and inquisitive nature of her job. "I spend most of my time on research projects where I get to work with any department or customer that has questions where I can delve into processes and data and provide real answers for those questions." Her training in food science, notably with Dr. Terry Siebenmorgen during her M.S. work, was been instrumental to her success. "Learning how to collect data, analyze that data, and draw conclusions from the data and observations is key for me in my role now." The FDSC classes "taught [her] to ask the right questions, understand processes, and document and interpret observations effectively."

For students preparing to enter the workforce, Matsler offers reassurance to take off the pressure of having it all figured out: "You don't have to have a grand master plan for your life when you graduate with your degree!" "Take a look at what's available," she says, "and give something a try." Her own career journey started in quality assurance at Riceland Foods, where she quickly realized QA wasn't her passion. However, she discovered a love for manufacturing through mentorship and hands-on experience. "This love of manufacturing has stayed with me through working at McKee and at Simmons and, I believe, has made me a better food scientist," she says. Her advice? "Look around, ask questions, and be interested in what people are willing to teach you—it will take you far."

FDSC Student Highlights

Shane Halvorson ('25)

Shane Halvorson, a Food Science and Culinary Arts undergraduate student, brings a unique perspective to the field. As a non-traditional student, his journey into food science was sparked by an unexpected connection. "I had an acquaintance that I knew from working in fine dining restaurant kitchens that moved into being a chef for an ingredient company. I had always enjoyed science in school, so learning how to apply that to food and cooking really inspired me to return to the U of A."

His experience in the program has expanded his understanding of food beyond the kitchen. "Because food science requires a broad understanding of different areas, it has definitely made me a better problem solver." This problem-solving mindset proved essential during his internship, where Halvorson had to adapt quickly. "Most of my working experience has been with fresh meats, but during my internship my primary project was working with different varieties of wheat flour, so I had to think on my feet and learn more about flour than I thought possible."

Beyond technical knowledge, Halvorson's personal experiences fuel his passion for the industry. "I grew up food insecure, so I have a different perspective on food than most. I hope to work on developing products that can be affordable and accessible to everyone." With his combined background in culinary arts and food science, he aspires to create solutions that make quality food more attainable for all.

Through hands-on experiences and a drive to make a difference, Halvorson is using his education to bridge the gap between science and accessibility, ensuring that food innovation reaches those who need it most.

For Ph.D. candidate **Manita Adhikari**, food science is more than a field of study—it's a passionate curiosity. "Having studied agricultural science and worked extensively in food production, I became fascinated by the post-harvest process—how food is preserved, kept safe, and ultimately delivered to consumers. This curiosity led me to pursue a degree in food science."

Since joining the University of Arkansas in 2022, Adhikari has immersed herself in food safety research, particularly in the overlooked area of low-moisture food (LMF) safety. "I am working on low-moisture food safety, a critical area often overlooked due to the misconception that LMFs do not support microbial growth. Through my research, I have developed methods to form LMF PBPs, providing a foundation for researchers to replicate contamination scenarios in food processing plants and investigate pathogen persistence." Her work contributes to developing critical prevention and mitigation strategies to enhance food safety.

Beyond research, Adhikari values the broader impact of food science. "Before studying food science, I didn't pay much attention to foodborne outbreaks. However, being part of the food safety field has increased my awareness, and I now actively educate my family and friends about food safety, helping them make informed decisions."

Adhikari also emphasizes the importance of staying informed in this ever-evolving industry. "Food Safety News is my go-to source for staying informed about foodborne outbreaks… Conferences such as IAFP and AAFP have also been invaluable, providing opportunities to learn from experts and engage in discussions about emerging challenges and innovations."

For students considering food science, Adhikari offers encouragement: "Food is an essential part of everyone's life, and working to understand its chemistry and microbiology is incredibly exciting. The scope of food science is vast and ever-growing… it offers endless opportunities to make a meaningful impact on society."

Manita Adhikari ('25)