



**15th Annual
Grain Science Graduate Student
Research Symposium**

October 26, 2023

International Grains Program (IGP)

Institute Conference Center

Schedule

- 8:00 Breakfast
- 8:30 Q & A Panel with Industry Professionals
- 9:30 Break
- 9:45 Proposal and Oral Presentations
- 12:00 Lunch
- 1:45 Poster Session
- 3:00 Dr. Hulya Dogan, Interim Department Head of Grain
Science & Industry
- 3:30 Awards

Panelists

Carter Wands, Miller Milling

Carter Wands recently joined the Miller Milling Team in September 2023 as Manager of Technical Sales and Innovation. Carter works to cultivate stronger technical relationships with current and new customers.

Carter has spent 9 years in the field of Technical Sales and Research and Development, with a focus on developing new products and bakery ingredients. He is a proud alumnus of Kansas State University, where he pursued a dual major in Milling Science and Bakery Science. His career began in Sydney, Australia working in Product Development and Technical Sales with the Manildra Group. After this Carter was promoted to Technical Sales of the retail division for Manildra Group USA. After this Carter worked for AB Mauri splitting time between Technical Sales in bakery, as well as working in Product Development. Most recently, he was Technical Sales Manager of Varietal Solutions at the Bay State Milling Company. Carter is also deeply engaged in the baking industry, serving as the Chairman of the Young Professionals Committee and on the Strategic Task Force Planning Committee at the ASB, as well as the Chairman Elect of the Milling and Baking Division at the Cereal & Grains Association.

Outside of his professional endeavors, Carter enjoys spending his downtime attending concerts and is an avid fan of football and basketball, with a particular passion for all things related to Kansas State. Additionally, he shares a love for exploring new destinations with his wife.

Rachel Klataske, Nu Life Market

Rachel is the Director of Business Development at Nu Life Market and has been with the company since 2016. She attended Kansas State University, graduating with a degree in Bakery Science and Management. She then worked at Post Foods in

Battle Creek, Michigan for eight years as a Product Development Scientist working on Fruity Pebbles, Cocoa Pebbles, and other cereal products. Rachel is an active member of the American Society of Baking, serving as a member of the Membership and Marketing committee, as well as the Kansas City Section of the Institute of Food Technologists, where she serves as Membership Chair.

Sarah Fischer, MGP Ingredients, Inc.

Sarah Fischer was named Food Technology Manager in 2020. She works closely with customers and the MGP sales team to develop food formulations and promote new concepts in the marketplace, and provides technical support and education to customers, brokers, and distributors. Sarah joined MGP as Applications Scientist in 2015, with responsibility for laboratory experiments using new ingredients and onsite product demonstrations at customer locations.

A combined interest in chemistry and food formulations inspired Sarah to pursue a career in food science. She noted that her “passion for helping create healthy, great-tasting foods that are also high in functionality” is what attracted her to MGP.

Sarah earned her Master of Science degree in Grain Science with a focus on carbohydrate polymers and emulsifiers at Kansas State University. Prior, Sarah was a science intern for a couple large food manufacturers in Minnesota. Sarah received her Bachelor of Science degree in food science at the University of Minnesota.

Proposal Presentations

- 9:45 Characterization and evaluation of soybean meal in extruded diets for dogs and cats. **Kallee Dunn.**
Advisors: Greg Aldrich, PhD and Elisa Karkle, PhD.
- 9:56 Valorization of wheat bran: Wheat bran proteins and bioactive peptides. **Michael Stump. Advisor: Yonghui Li, PhD.**
- 10:07 Swine digestive efficiency of feed containing sorghum and sorghum dried distillers grains with and without the presence of a specific microflora. **W. Garret Friesen.**
Advisor: Chad Paulk, PhD.
- 10:18 Effect of pellet die on standardized and apparent ileal digestibility of amino acids in diets fed to growing pigs. **Diego Lopez. Advisor: Chad Paulk, PhD.**
- 10:29 3D Printing Plant-Based Proteins. **Aidan Cairns.**
Advisor: Sajid Alavi, PhD.
- 10:40 Elevating plant-based meat: Innovating texture and precision with chemistry, engineering, and machine learning in the transformation of minimally processed legumes. **Shirin Sheikhi Zadeh. Advisor: Sajid Alavi, PhD.**

Oral Presentations

- 11:00 Sourdough acidification depending on substrate availability. **Andrew Dorsch. Advisor: Hulya Dogan, PhD and Elisa Karkle, PhD.**
- 11:11 Functionality of kernza (intermediate wheatgrass) in sourdough fermentation and bread quality. **Brianna Iorga. Advisor: Elisa Karkle, PhD.**
- 11:22 pLM4AIg: Protein language model-based predictors for allergenic proteins and peptides. **Zhenjiao Du. Advisor: Yonghui Li, PhD.**
- 11:33 Comparative analysis of the physicochemical and functional properties of plant proteins before and after extrusion texturization. **Ruoshi Xiao. Advisor: Yonghui Li, PhD.**
- 11:44 AlphaFold 2-based stacking deep learning model for protein solubility prediction and food application. **Hyukjin Kwon. Advisor: Yonghui Li, PhD.**
- 11:55 Starch-based food 3D printing: Impact of starch source, moisture level, and sucrose inclusion on physicochemical properties and performance. **Conrad Kabus. Advisor: Sajid Alavi, PhD.**
- 12:06 Effects of grain source on processing energy inputs and pellet characteristics of extruded rainbow trout feed. **Tucker Graff. Advisor: Sajid Alavi, PhD.**
- 12:17 Kernza and sorghum as sustainable ingredients in extruded precooked pasta and quality analysis. **Julia Rivera. Advisor: Sajid Alavi, PhD.**

- 12:28 Wheat bran antioxidants elevate human induced pluripotent stem cells and human embryonic stem cells' growth performance. **Md Sharifur Rahman. Advisor: Xiuzhi Susan Sun, PhD.**
- 12:39 Efficacy of two amorphous silica powders applied to soft red winter wheat against the lesser grain borer, *Rhyzopertha dominica* (Fabricius). **Manivannan Selladurai. Advisor: Bhadriraju Subramanyam, PhD.**
- 12:50 Development and progeny production of lesser grain borer, *Rhyzopertha dominica* (Fabricius) on hulled, dehulled Kernza[®] and wheat. **Fizra Ahmad. Advisor: Bhadriraju Subramanyam, PhD.**
- 1:01 Efficacy of grain protectants on hulled and dehulled Kernza[®] against *Sitophilus oryzae* (L.). **Natasha Bhattarai. Advisor: Bhadriraju Subramanyam, PhD.**
- 1:12 Comparison of different methods to measure damaged starch content in pulse flours with different particle sizes. **Bei Shen. Advisors: Yong-Cheng Shi, PhD. and Yonghui Li, PhD.**
- 1:23 Iodine staining of waxy sorghum kernels and the isolated sorghum starch. **Ying Huang. Advisor: Yong-Cheng Shi, PhD.**
- 1:34 Thermal properties of pulses flours with different moisture contents. **Jing Qi. Advisor: Yong-Cheng Shi, PhD.**

Graduate Posters

Impact of cricket protein powder addition on wheat dough properties and bread quality. **Mayra Perez-Fajardo. Advisor: Hulya Dogan, PhD.**

Effect of Ultrasound tempering on roller milling of a white non-tannin and r red-tannin sorghum. **Manoj Kumar Pulivarthi. Advisor: Kaliramesh Siliveru, PhD.**

Tempering vs soaking: Differences in the breakage behavior of single wheat kernels. **Anu Suprabha Raj. Advisor: Kaliramesh Siliveru, PhD.**

Mitigating *Salmonella* contamination in pizza dough: Cold plasma-based hurdle interventions. **Shivaprasad DP. Advisor: Kaliramesh Siliveru, PhD.**

Evaluation of sorghum pericarp varieties on blood parameters and antioxidant capacity in healthy adult dogs. **Katelyn Bailey. Advisor: Greg Aldrich, PhD.**

Impact of whole pulse flour incorporation from red bean, navy bean and cowpea on whole wheat flour bread quality. **Bipin Rajpurohit. Advisor: Yonghui Li, PhD.**

Extraction characteristics, physicochemical and functional properties of salt extracted pulse proteins. **Bipin Rajpurohit. Advisor: Yonghui Li, PhD.**

Comparative evaluation of microorganisms for biological treatment of hydrothermal liquefaction wastewater from sewage sludge. **Meicen Liu. Advisor: Yi Zheng, PhD.**

Biological upgrading of starch to anti-cancer compounds by *Thraustochytrium striatum*. **Sang Li. Advisor: Yi Zheng, PhD.**
Comparing the effects of different antimicrobial treatments on

reducing the *E. coli* load of wheat during tempering. **Jared Lou Rivera. Advisor: Kaliramesh Siliveru, PhD.**

Utilization of dried bakery products as an ingredient in extruded pet food. **Larissa Alves Koulicoff. Advisor: Greg Aldrich, PhD.**

Effects of inoculation dosage and fermentation duration on crude protein content increase and in- vitro protein digestibility of soybean meal fermented by *Aspergillus Oryzae*. **Youhan Chen Advisor: Greg Aldrich, PhD.**