

# DEPARTMENT OF FOOD SCIENCE ANNUAL NEWSLETTER









# FROM THE DEPARTMENT HEAD



Mark Twain said, "A person who won't read has no advantage over one who can't." That's a rather trivial conclusion on the surface but becomes profound when a university suddenly shifts all of its teaching from face-to-face to online. As you likely know, this is what happened at Purdue in March. The faculty and students in Food Science responded with Boilermaker "can do" spirit. Many instructors sacrificed personal time to develop online material ready for students when they returned from Spring Break. Students scattered all over the country and world adjusted their schedules to "Purdue-time" in order to interact with each other and participate in online discussions.

As a department we have much to celebrate, despite the challenges of the day. Our students have successfully competed in national competitions and prevailed. Our Phi Tau Sigma chapter was awarded

the Institute of Food Technologist's Chapter of the Year Award for 2020 in honor of their commitment and support of excellence and education related to the food industry. Dr. Betty Feng received the College of Agriculture's PK-12 Emerging Faculty Impact Award for her food safety outreach to youth and teachers, Dr. Yuan Yao was named one of Purdue's inaugural University Entrepreneurial Scholars for his success commercializing new discoveries.

Without a doubt, the way we deliver a high-quality university degree at Purdue will change as have many of our daily activities in the Covid-19 world in which we currently live. However, one thing that will continue unchanged are the Purdue Department of Food Science's commitments to serve society through new discoveries and prepare students to transform the food industry. We depend on all of you and each other working together to achieve these goals, and are encouraged by the words of Helen Keller, "Alone we can do so little; together we can do so much."

Thanks for all the support that you provide to us that makes our efforts possible. Please stay safe and do your part to support a safer and more resilient community.

Boiler Up!

### Dr. Ken Foster

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Interim Department Head of Food Science Professor of Agricultural Economics

# **MORE INFORMATION**

The annual newsletter is only a glimpse of what's happening in the Department of Food Science. Please visit our website for more information at www.foodsci.purdue.edu.



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Editor and Photographer: Laurie Lambert Van Keppel
Contributing Photographers: Tom Campbell, Adrian Peacock-Downey

# **ANNOUNCEMENTS**

# FAREWELL

### Dr. Brian Farkas

Brian Farkas joined the Department in July 2013 succeeding Suzanne Nielsen as department head. Brian ended his career at Purdue on December 31, 2019 and in March 2020 joined McCormick & Company in Hunt Valley, Maryland to serve as Chief Science

Officer. During his tenure as Head, Brian continued the Department's long tradition of collaborating with industry and deepened the Department's entrepreneurial pursuits. Several spaces within Nelson Hall were renovated and improved as a result of his leadership. In 2016, a room adjacent to the pilot plant was transformed into the Skidmore Food Product Development



Lab as a result of the generous donation from Doug and Laura Skidmore. Doug, owner and President of Skidmore Sales and Distributing, has been a longtime supporter of the Department and an Industrial Associates member. In 2019, the Skidmore Lab became a certified commercial kitchen which allows products produced in that space to be sold via retail outlets. This capability enhances the food science faculty and staff's ability to assist food entrepreneurs which contributes not only to those individual's livelihood, but also to Indiana's economy. With the addition of a 1-Barrel brewing system from Lafayette, Indiana based Blichmann Engineering, LLC in 2018, the Department's new pilot brewery became an integral addition to the



pilot plant and key facility to support the fermentation sciences academic minor launched fall semester 2018. Collaborations with Chris Johnson, owner and brewmaster of People's Brewing Company in Lafayette led to the development and production of Boiler Gold (2017) and Boiler Black (2018). A generous donation by the owner and employees of Morgan Foods in Austin, Indiana replaced the antiquated retorts in the pilot plant with a new one in 2019 enabling the Department to continue to train students and industry professionals in the basics of thermal processing and food preservation. Two Purdue collaborations led to food science student projects turning into retail products, Boiler Tracks Ice Cream (2018) and Boiler Bee Honey (2019).

### **Jessica Luigs**

Jessica Luigs joined Purdue and the Department of Food Science in August 2016 as receptionist for the main office and events support staff member. As a member of the main office staff team, she was the "behind the scenes" person making sure event logistics were arranged, set up and cleaned up. In February 2020, Jessica took the opportunity to advance her career and started in



a department support position in Purdue's Brian Lamb School of Communication in the College of Liberal Arts.

### **Marliese Orr**

Marliese Orr joined the Department of Food Science in 2008 as an account clerk in the business office where she assisted employees with travel reservations and reports. She also processed bi-weekly payroll, tracked inventory and assisted with purchasing. In October 2019 Marliese became a Central Support Coordinator within Purdue's newly formed Travel Office. In her new role, she monitors



travel across all of campus. She assists in developing procedures and runs and analyzes travel reports. Marliese also helps analyze root causes with the central travel system Concur and develops resolutions.

# **ANNOUNCEMENTS**

# WELCOME

### Vicki Arnett

**Business Office Account Clerk** 

Vicki Arnett joined the Department Business Office in March 2020 as account clerk. Vicki is new to Purdue University and West Lafayette. Vicki comes from the healthcare industry



previously working in areas of health information management, quality improvement, and health insurance billing. Vicki received a B.S. in Business Management from Indiana University. She is the proud parent of a Purdue Boilermaker sophomore in the College of Health and Human Sciences. Boiler Up!

### **Dane Deemer**

Computational Biology Project Manager for Microbiome Lab

Dane Deemer joined the
Department in March 2020 as the
computational biology project
manager in Dr. Steve Lindemann's
lab. Dane will focus primarily
on the application of microbial
metagenomics. Previously, Dane
worked in the pharmaceutical
industry where he specialized
in many broad applications
of bioinformatics and data



analysis. Some of his work included analyzing drug resistant mechanisms and immunological diversity in humans with diverse pathologies. Dane is from northern Michigan. He received a bachelor's degree in biology from Albion College and a master's degree in molecular biology from Oakland University.

### Dr. Ken Foster

Interim Department Head

Ken Foster joined the Department on January 1, 2020 as interim department head. Ken has been a professor of Agricultural Economics at Purdue for 30 years. For nine of those (2008-17), he was the head of that department. Dr. Foster's research focuses on the performance of markets and how new agricultural technologies economically impact markets and market participants. His research has addressed market power in meat processing, the use of contracts in agricultural production, farm production and waste management technology, and most recently small farm storage of coffee and cacao in Colombia. In addition to his research and outreach, Dr. Foster teaches the courses Agricultural Prices, Applied Economic Time Series, Food Security and

Sustainability, and co-teaches Water for Developing Countries.

Ken's research and outreach to the food and agricultural community has been recognized by several Purdue Dean's Team Awards and national awards from the Agricultural and Applied Economics Association, the American Society of Agricultural Engineers, and the American Society of Animal Science. Ken received outstanding graduate educator awards from the College of Ag, Purdue, and the Agricultural and Applied Economics Association. This spring he was honored with the Student Choice Spotlight Educator Award in the College of Ag.

After resigning from the position of head in Ag Econ, Ken spent a year on sabbatical in Colombia and teaching a study abroad course there. The following year he served as a President's Fellow for the Colombia Purdue Partnership program in the Office of the Vice President for Engagement and Research. The senior faculty in Food Science

Dr. Foster and his collaborators enjoy a break



are all actively engaged in crucial research and engagement programs that make it difficult for them to devote time to be interim department head. When Dr. Farkas departed Purdue, Dean Plaut asked Ken to use his experience in department administration to keep Purdue Food Science moving forward on its quest to be the best Food Science department in the world.

### **Angie Gutterman**

Coordinator for Whistler Center for Carbohydrate Research

Angie Gutterman joined the Whistler Center as the Center's coordinator in September 2019. Before joining the Center, Angie worked in Purdue's Krannert School of Management as an Administrative Assistant for the Department Heads, where she was responsible for managing the promotion and review files for more than 120 faculty members.



during cacao harvest near Belén de Umbría.



She received her bachelor's degree in business administration from Butler University in 1985.

### **Tim Rendell**

Managing Director of the USAID Innovation Lab for Food Processing and Post-Harvest Handling

Tim Rendall joined the Department in May 2019. The U.S. Agency for International Development (USAID) extended the work of Purdue's Feed the Future Innovation Lab for Food



**Processing and Post-Harvest** Handling (FPL) for another three years (2019-2022). Tim has joined as the Managing Director of the FPL. Tim comes from the University of Illinois where he was a project manager with the Appropriate Scale Mechanization Consortium as part of the Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification. He has a background in Agricultural and Biological Engineering and has international agriculture experience in Burkina Faso, Ethiopia, Cambodia, Bangladesh, and Sierra Leone.

### **Kylie Wagoner**

**Business Office Manager** 

Kylie Wagoner joined the Business Office team in September 2019. She comes from working in seed production as a management trainee. Kylie graduated with a bachelor's degree in Agricultural



Economics from Purdue University in 2017. She loved having the opportunity to come back to campus as a staff member in the College of Agriculture.

### Molly (McKneight) Webb

Managing Director of the USAID Feed the Future Innovation Lab for Food Safety

Molly Webb recently joined the Department and the Feed the Future Innovation Lab for Food Safety (FSIL) as Managing Director. She had previously served in



management and research roles for several multi-disciplinary USAID projects focused in Africa and Asia. Prior to joining the FSIL, Molly worked in Kansas for Rabo AgriFinance, which provides financing for leading U.S. agricultural producers and agribusinesses. As a Purdue graduate of Food Science (B.S. 2014) and Agronomy (M.S. 2015), she is excited to return to the Department and College.

# **DEPARTMENT HIGHLIGHTS**



# The Mighty Microbes Display at the 2019 Indiana State Fair

Food Science faculty and staff educated thousands of fair attendees of all ages about how microorganisms help save the world through bioprocesses in the three areas of food, pharmacy and renewability. The interactive exhibition explains what microorganisms are and how they can create various bioproducts through bioprocessing. The brewing process is highlighted as a bioprocess because it is one of the best understood fermentation processes and many other bioprocesses resemble it. "We hope visitors will realize that not all microbes are 'bad' and will become more aware of the variety of applications that microorganisms can be used for," said Fernanda San Martin associate professor of food science at Purdue University. "Educating kids about the usefulness of microbes will, hopefully, stimulate their curiosity and make them interested in science careers," continued San Martin.



### Purdue Food Science leading \$10M Effort to Address Global Food Safety

In August 2019, the **United States Agency for International Development (USAID)** awarded nearly \$10 million to Purdue to establish the first-ever Feed the Future Innovation Lab for Food Safety (FSIL), with the opportunity for up to \$20 million in additional funding from USAID for research tailored to specific countries' needs. Dr. **Haley Oliver**, a professor of **food science**, is directing the lab in collaboration with Cornell University. Alumna Molly Weber (B.S. '14, M.S. '15) is the managing director of the lab. Scientists are developing programs to improve food safety in Bangladesh, Kenya, Ethiopia, Senegal and Cambodia. "To make an impact we need to build awareness and an understanding of what food safety is so stakeholders are motivated to adopt behavior changes that result in decreased exposure to foodborne disease-causing agents," Oliver said. "We will be working in developing economies that will benefit from food safety research at the household level, improved enabling conditions (e.g. policy), and technologies that support scale-up for producers and processors to reach higher-value markets."

# College of Ag Staff Networking Event hosted by Food Science Huge Success

Food Science staff hosted a College of Ag Staff Networking event in February 2020 which drew over 100 Ag staff members (3-4 times more than the previous 6 months events' attendance!). Laurie Van Keppel was the lead and is a member of the Ag Dean's Staff Advisory Committee that plans and executes these monthly Ag Staff networking events. The food science planning and executing committee members were: Laurie Van Keppel, Allie Kingery, Adrian Peacock-Downey, Erik Kurdelak, Jessica Luigs, Jean Jensen, Jill Blume, Katie Barnett, and Pat Polowsky. Attendees learned about food and fermentation sciences. They enjoyed seeing the Pilot Plant, Brewery, Skidmore Food Product Development Lab, Enology Library, and participated in a sensory test while sampling Indiana wines, brews, kefir, a beautiful charcuterie board and kimchi fried rice prepared by Allie, kombucha, chicken nuggets dipped in Erik's fermented hot sauce. Jill and Katie sent attendees home with a wine tasting glass and some other goodies. Huge thanks to students

Erin Sukala, Emily Chuang, Stephanie Roth, and Jacob Kyle who jumped in to help. And a big thank you to our donors Circle City Kombucha, People's Brewing Company, and Brakebush Brothers, Inc.



College of Agriculture staff enjoy fermented foods and beverages during the networking event highlighting food science programs and facilities in Nelson Hall.



### Collaboration with Vincennes University Leads to New Food Safety Training Hub

The Food Safety Modernization Act (FSMA) Produce Safety Rule ushered in a new era in fresh fruit and vegetable production. The science-based regulation mandates new requirements for growing, harvesting, handling, and storage of fresh produce. When the Safe Produce Indiana team comprised of Purdue Extension Specialists Dr. Amanda Deering, Scott Monroe, and Rhonda Taylor began offering classroom-based courses to educate produce growers on the Rule, the team did not have a space conducive to hands-on learning and practicing of these concepts. In November 2019, Purdue Extension and Safe Produce Indiana celebrated the grand opening of the new Food Safety Training Hub located in the newly constructed Agricultural Center at Vincennes University. With a substantial produce grower population in Southwest Indiana, Vincennes offered a prime location for a training facility. The Training Hub, located on Highway 41 adjacent to Purdue's Southwest Purdue Ag Center (SWPAC) houses functioning post-harvest equipment, an interactive learning classroom, a state-of-the art laboratory, and an audio-visual room to provide a dedicated facility for hands-on produce safety training.



### Allpax 2402 Retort Commissioned in Pilot Plant Thanks to Morgan Foods Company

Thanks to the generosity of the leadership and employees of Morgan Food Company, our Food Science Pilot Plant has a new retort! Big thanks to Pilot Plant manager Erik Kurdelak and his team of food science student employees for getting that unit up and running.

### **Boiler Bee Honey**

Sophomore food science student Alyson McGovern worked with Brock Harpur, assistant professor in the Entomology Department and Food Science pilot plant manager Erik Kurdelak to create and process the inaugural batch of Boiler Bee Honey. McGovern guided the project from the honey's extraction to the bottling and labeling of the product. She was also involved in obtaining a certificate for wholesale. Kurdelak explained, "Any revenue generated will be split between the two departments and allocated for research, much like we do with revenue from Boiler Black and Boiler Gold beers. What's really important is finding ways for students to acquire the experiences that will make them leaders in their fields. With this project, Alyson learned how to safely, legally and efficiently take a product from a raw ingredient to the retail shelf." The nearly 35,000 ounces of honey produced roughly 3,000 bottles and made their debut at the annual Ag Alumni Association Fish Fry in February. The bees in the Purdue apiary feed on wildflowers, which gives the Boiler Bee Honey a richer taste than clover honey. Bottles are available on campus at the Boilermaker Butcher Block.



Sophomore Alyson McGovern processes and bottles Boiler Bee Honey as pilot plant manager, Erik Kurdelak supervises in the background.

# **ALUMNI RECOGNITIONS**

# 2020 DISTINGUISHED AG ALUMNI AWARD

### Curt Emenhiser (B.S. 1989)

Food Research and Development Leader
Nestle Nutrition

Due to COVID-19, the award celebration was canceled and will be rescheduled for spring 2021.

# 2019 OUTSTANDING FOOD SCIENCE AWARDS

### Jung Han (Ph.D. 1996)

Vice President of Food Safety, Compliance and Future Portfolia Pulmuone Foods

Dr. Jung Han is a Vice President heading a Global Food Safety and Compliance Division at Pulmuone Foods USA and Nasoya Foods USA. When Dr. Han first joined Pulmuone in 2016, he served as Vice President of Research and Development. He was promoted to his current position in September 2019. Recently, he has added responsibility of leading a new department for regulatory compliance and future portfolio development. Pulmuone Foods USA is the top number 1 tofu manufacturer in North America with over 70% of market share from retail grocery channels. Dr. Han is in charge of all Food Safety Modernization Act compliance and FDA and USDA regulation programs in his company, as well as developing various new business opportunities utilizing his company's strong soybean business leadership.

After completing a Ph.D. in food science from Purdue University under the mentorship of Dr. John Floros, Dr. Han was an Associate Professor in the Department of Food Science at the University of Manitoba Canada until 2007. He was a Principal Engineer at PepsiCo Corporate Research from 2007 to 2015. Dr. Han is an active member of the Institute of Food Technologists (IFT). He served as an IFT Food Packaging Division Chair. Since 2004 he has served as an Associate Editor of the Journal of Food Science. Dr. Han is an inaugural member of the International Food Science Certification Commission Certified Food Scientist (CFS), a recipient of 2018 IFT Riester-Davis-Brody Packaging Award, a certified Foreign Supplier Verification Program Qualified Individual (FSVPQI), and a certified lead instructor for Preventive Control for Human Foods Qualified Individual (PCQI) certification program.



Dr. Han is still practicing his researcher's nature and teacher's intimacy at his workplace. He wrote two books with other co-authors, edited 6 science books in the area of food processing and packaging, and published over 90 scientific journal articles. He is actively mentoring college students and young professionals with their career development plans. To extend his mentoring competency, Dr. Han is currently in the Master's of Art program in Christian Counseling Psychology at the Presbyterian Theological Seminary of America as a part-time graduate student.

### Matthew Moudy (B.S. 1992)

North America Procurement Head Mars Foods

Mr. Matthew Moudy is North America Procurement Head at Mars Foods in Chicago, Illinois. He is responsible for the raw material, packaging and external manufacturing supply chains that support UNCLE BEN'S® and the Mars organic brand SEEDS OF CHANGE®.

Mars Incorporated is a privately owned American global manufacturer of confectionary, globally known for their popular M&M's candy, Snickers, Milky Way and Twix bars. Mars, Incorporated also owns and manufactures Wrigley products, pet food including the brands PEDIGREE®, Waltham Center for Pet Nutrition, WHISKAS®, ROYAL CANIN®, AniCura, WISDOM PANEL™ and VCA™, and other food products including brands like UNCLE BEN'S®, Dolmio<sup>®</sup> and Seeds of Change<sup>™</sup>. Mars is also committed to help improve human health and has partnered with one of the world's leading philanthropic organizations, the Tata Trusts, to create GOMO™ - a nutritious product in India. Through the dietary supplement COCOAVIA™, Mars is using their research on cocoa flavanols to create evidencebased products that support healthy blood flow to help people support their heart and brain health. And Mars is building a global Personalized Nutrition business starting with their partnership with foodspring® - one of Europe's largest and fastest growing direct-to-consumer targeted nutrition companies. With reported annual sales of over \$35 billion, Mars is ranked in the top 10 largest privately held companies in the USA.

Mr. Moudy joined Mars Foods in New Jersey after he completed a bachelor's degree in food science at Purdue University in 1992. Over Matt's 27 years with Mars Inc, he has held numerous Innovation, Quality, Cost Transformation and Procurement leadership positions in four geographic locations in New Jersey, California, Tennessee, and now in Chicago, Illinois.

Matt grew-up near Purdue on a farm near Covington Indiana and first learned about the Food Science program on 4-H trips to campus. At Purdue, Matt lived in FarmHouse fraternity, was a member of Mortar Board Honorary and studied abroad in Ukraine.





### Jonathan Stapley (Ph.D. 2004)

Founder and Chief Technology Officer Dynamic Food Ingredients Corp.

Dr. Jonathan Stapley is founder and Chief Technology Officer of Dynamic Food Ingredients (DFI), Corporation. DFI began with Dr. Stapley's graduate research at Purdue University under the direction of Dr. James N. Bemiller, within the Whistler Center for Carbohydrate Research. After some initial work on starch granule reactivity, Dr. Stapley began a research program to develop new pathways for the production of Xylitol, a healthy sweetener. This work resulted in a novel application of "green" electrochemistry—the use of electricity in the place of chemical reagents—to sugars, which Purdue University subsequently patented. During Dr. Stapley's graduate work, he ran a consulting company that specialized in product ideation, formulation, and scale-up in the Natural Foods sector. One of Dr. Stapley's clients learned of his graduate work and together they founded a company to license the patent and industrialize it.

DFI then began the long process of validating the industrial feasibility of the technology, scaling it up, and bringing it to market. Throughout this process, Dr. Stapley has directed all research and development, engineering, and intellectual property management, and as such has been the co-inventor of numerous patents for the production of new products. Dr. Stapley's innovations have included new pathways for many alternative sweeteners, rare sugars, renewable acids, and amino acids. He has overseen the development of novel equipment for large scale implementation of electrochemistry, complete production processes, and industrial plant designs.

Dr. Stapley parents four children with his wife of nineteen years, and is also an award-winning historian, with his most recent book published by Oxford University Press. He plays guitar and writes music, still hoping to catch his big break as a rock star.

# **ALUMNI RECOGNITIONS** continued

# 2020 FOOD SCIENCE EARLY CAREER AWARDS

### Amanda (Bettasso) Bigando (M.S.2010)

Research and Development Manager Newly Weds Foods

Amanda (Bettasso) Bigando is a research and development manager for Newly Weds Foods at their Springdale, Arkansas location. Amanda came to Purdue University after completing her bachelor's degree in food science from the University of Arkansas in 2008. She completed her master's degree in food science at Purdue in 2010 under the direction of Dr. Arun Bhunia. At Purdue, Amanda did research in microbial detection and identification, specifically working with light scattering technology. From this research she is a credited author in two different publications. She also participated in the food science department's study abroad program, spending two weeks in China learning about the country's food industry and agriculture education programs. Amanda also served as a teaching assistant for the undergraduate food microbiology class and lab in the fall of 2009. For her efforts, she received the department's B.J. Liska Award for Outstanding Teaching Assistant as well as the university's Teaching Academy Graduate Teaching Award.

Amanda first encountered Newly Weds Foods Company at a campus job fair at Purdue, and this July will be her 10th anniversary with the company. During her tenure she has acted as a product development scientist and more recently has taken on a management role. She manages the sample lab and several scientists located at both the Springdale, Arkansas and Mt. Pleasant, Texas facilities. She develops breadcrumbs, batters, breadings, and seasoning blends for her customers to use in further processed foods. Amanda has developed new products contributing to over 30 million dollars in sales for Newly Weds. She has worked on several key accounts over the years, including some of the largest food processors and food chains in the country. She has also developed an affinity for developing products for the National School Lunch Program. Always wanting to continue her education, she has completed additional coursework in scientific baking and food labeling, as well as special training courses on school lunch regulations and manufacturing equipment.

### Kristin Burkholder (Ph.D. 2010)

Associate Professor of Microbiology University of New England

Kristin Burkholder is an Associate Professor of Microbiology at the University of New England in southern Maine near Portland. Kristin received a bachelor's degree in biology from Virginia Tech, and then came to Purdue University for her master's and Ph.D. degrees. Kristin earned her master's degree in 2004 from the Animal Sciences Department, where she worked with Dr. John Patterson and studied the effect of farming-related stressors on Salmonella colonization in poultry. She then moved to the Food Science Department for her doctoral work in Dr. Arun Bhunia's lab, where she studied infection strategies used by the pathogen *Listeria monocytogenes*. While working toward her Ph.D., Kristin also served as the primary instructor for the undergraduate food microbiology lecture and laboratory courses. That teaching experience, along with the work she was doing under Dr. Bhunia's mentorship, spurred her interest in an academic career.

After graduating from Purdue, Kristin pursued a postdoctoral fellowship at the University of Michigan, where she studied how the human immune system responds to pathogens like *Listeria*. In 2012, Kristin accepted a faculty position in the Biology Department at the University of New England (UNE). At UNE, Kristin teaches microbiology-related courses, including a course in food microbiology and food safety, and has received several university teaching awards.

### Farirayi Chikerema (B.S. 2010)

Corporate Quality Manager Impossible Foods

> Farirayi Chikerema is the Corporate Quality Manager at Impossible Foods in Redwood City, California. Farirayi began his food science career at Leprino Foods in Lemoore California as a management trainee after graduating from Purdue University in 2010 with a bachelor's degree in Food Science. Farirayi worked on various efficiency projects at Leprino most notably reducing fat loss to 3% in cheese vats to improve lactose dryer heating capability resulting in increased yields allowing for six figure earnings for the company. Farirayi moved on to become a whey production supervisor running 9 million pounds of whey stream daily to produce whey protein and lactose powder. After two years in whey manufacturing, Farirayi moved to the cheese department for an additional two years before leaving Leprino foods for Blue Apron in Richmond, California. Farirayi was hired as the food safety manager at Blue Apron, an ecommerce food company. His primary focus was to build systems via people development and influencing all levels of leadership on how to be productive while maintaining a food safe culture. This was a daunting task with many teams and leaders that were new to food manufacturing. In the two years with Blue Apron, Farirayi built a strong team of supervisors and technicians that implemented food safety systems from the ground up to meet all state, federal, third party and claims guidelines, which resulted in an outstanding 98% score in their first Global

Food Safety Initiative (GFSI) audit. Farirayi was also active in starting up a project with the Purdue Food Science Department to work on methods to maintain the cold chain in a food box.

The success at Blue Apron launched Farirayi for a new challenge as Impossible Foods as food safety and quality manager. The facility was just starting up their operations into manufacturing plant-based meat in Oakland, California. At Impossible Foods, Farirayi has helped the Oakland facility gain GFSI and claims certification in a short time opening up sales capabilities in addition to quality systems with measurable metrics. Farirayi was promoted to corporate quality manager for Impossible Foods and now manages multiple co-packing facilities in the Chicago area.

### **David Schroeder (M.S. 2006, Ph.D. 2009)**

Principal Scientist

Kraft Heinz Company

David Schroeder is a Kraft Heinz Company (KHC) senior principal scientist in Glenview, Illinois. In this role for the past six years, David drives and protects innovation and product quality by connecting mass spectrometry and sensory measurements to deliver insights. Leveraging cutting edge analytical tools enables David to investigate ingredients, processes and products. David performs nontargeted analysismultivariate analysis, such as aroma, color, defects, etc., to deliver actionable results. As KHC Analytical Sciences Quality Manager, David led ISO 17025 implementation, accreditation and continuous improvement.

Prior to joining Kraft Heinz, David was a U.S. Environmental Protection Agency (EPA) chemist. He led a U.S. EPA team to develop, execute and publish Gulf of Mexico Deepwater Horizon Oil Spill Dispersant Liquid Chromatography-Mass Spectrometry analysis used to guide emergency response. The work was recognized with EPA's Science and Technological Achievement Award, one of EPA's most prestigious scientific awards. David developed emerging contaminant analysis methodology and performed metals analysis. Federal government service increased David's awareness of environmental regulations, enforcement authority, and built contacts valuable to reduce perceived hurdles and ingredient and food quality improvement.

As a U.S. Department of Homeland Security Fellow. David obtained a master's degree under the mentorship of Dr. Kirby Hayes and Dr. Suzanne Nielsen in 2006 and a Ph.D. degree under the mentorship of Dr. David Nivens in 2009 in the Department of Food Science focused on food chemistry. At Purdue University, David served as Phi Tau Sigma President, Food Science Graduate Student Association Treasurer, Institute of Food Technologists Student Association Midwest Section Representative, and IFT member experience committee member. David completed a Bachelor of Agricultural Sciences at University of Nebraska-Lincoln in Food Science & Technology with minors in Chemistry, Agribusiness and Agricultural Economics. David and his wife Jessica, who obtained her master's degree in food science also from Purdue in 2007, are the parents of two boys.



2020 Food Science Early Career Awardees with food science student citation readers. Left to right: Kristen Burkholder, Josh Martin, David Schroeder, Farirayi Chikerema, Amanda Bigando, Max Voorn, Julia Schmidt, Dr. Suzanne Nielsen, Emily Chuang.

# **FACULTY/STAFF RECOGNITIONS**

# FOOD SCIENCE DEPARTMENT AWARDS

### 2019 Jack Long Outstanding Undergraduate Teaching Award:

### **Bruce Applegate**

Dr. Jack Long was an outstanding educator while a faculty member at Purdue. He was well known for his commitment to undergraduate students in the College of Agriculture, and the quality of their education.



Dr. Bruce Applegate teaching food microbiology.

# 2019 Outstanding Service to Students Award:

Laurie Van Keppel, Career Services & External Relations Coordinator



Laurie Lambert Van Keppel with birthday buddy Ph.D. Student Morgan Malm.

### 2019 Outstanding Service to the Department Staff Award: *Erik Kurdelak*, Pilot Lab

### Manager



Erik Kurdelak preparing to teach annual aseptic workshop.

### Christian Butzke

Purdue Ventures Ag-Celerator Award, 2020

Purdue College of Agriculture Millionaire's Club, 2019

### **Amanda Deering**

Purdue College of Agriculture Millionaire's Club, 2019

### **Betty Feng**

Purdue Scholarship of Engagement Fellow, 2019-20

Purdue College of Agriculture PK-12 Council, Emerging Faculty Impact Award, 2020

National Extension Association of Family and Consumer Sciences, National Multi-state Collaboration Award, 2019

The Association of Public Land-Grant Universities and the U.S. Department of Agriculture's National Institute of Food and Agriculture, National Excellence in Multi-state Research Award, 2019

### **Bruce Hamaker**

Purdue Office of Technology and Commercialization, Innovators Hall of Fame, 2019

### Jen-Yi Huang

Elsevier's Journal of Food Engineering, Finalist for Young Food Engineer Award, 2019

### **Kee-Hong Kim**

Purdue Faculty Entrepreneur Learning Academy, 2019-20

### Lisa Mauer

Named Purdue University Associate Vice Provost for Faculty Affairs, 2020

Selected as member of Purdue University COVID-19 Task Force, 2020

Purdue College of Agriculture Millionaire's Club, 2019

### Suzanne Nielsen

Purdue International Programs in Agriculture Lowell S. Hardin Award of Excellence in International Agriculture, Inaugural class, 2020

### Haley Oliver

Purdue College of Agriculture Corrine Alexander Spirit of the Land Grant Mission Award, 2019

### Yuan Yao

Purdue Faculty Entrepreneur Learning Academy, 2019-20

Purdue Faculty Entrepreneurial Scholar Inaugural Class, 2020

### Katie Barnett

Selected to Indiana Agricultural Leadership Program, 2020



Suzanne Nielsen (right), poses with Karen Plaut (left), Dean of the College of Agriculture and Akin Adesina (center), President of the African Development Bank and 2017 World Food Prize Laureate at the 2018 Scale Up Conference, one of many international activities which led to Suzanne's selection as one of five recipients of the inaugural 2020 Lowell Harden Memorial Award.

# FACULTY PROMOTIONS

### **Haley Oliver**

Promoted to Full Professor of Food Science

### Yuan Yao

Promoted to Full Professor of Food Science

### **Amanda Deering**

Promoted to Clinical Associate Professor of Food Science

# IN THE NEWS

### Dr. Carlos Corvalan

"Microbubble findings could reduce chemical, water use in food processing" *Purdue Ag News* 

### Dr. Amanda Deering

"Risk of *E. coli* in hydroponic and aquaponic systems may be greater than once thought" *Purdue Ag News* 

"Don't fear eating your fruits and veggies as virus concerns grip nation" *Purdue News* 

"Is it safe to eat at buffet restaurants when they reopen? What health experts say" *Today* 

"Golden Corral and other buffets start reopening but with one big change — no buffets" *The News & Observer* 

"7 Mistakes You Make When Washing Produce" *Money Talks News* 

"Protecting farm labor during the COVID-19 pandemic" *Purdue Ag News* 

"Purdue Experts Emphasize Safety of Fresh Produce During Coronavirus" *Green House Grower* 

### Dr. Betty Feng

"The 'Poke Test' for checking if meat is cooked is a total sham" *Real Simple* 

Take home message? Avoid the "poke test" and use your meat thermometer!

"Celebrity chefs could reduce foodborne illness" Morning Ag Clips

"Food safety best practices and resources during COVID-19" *Purdue News* 

### Dr. Steve Lindemann

"What wolves in Yellowstone can teach us about probiotics", op-ed in *Scientific American* 

### Erik Kurdelak

"How the food science Pilot Plant helps drive Indiana's economy" *Purdue Ag News* 

### Ryann Laky, Junior

"Double Duty: Ryann Laky juggles ROTC, academics" *Purdue News* 

# STUDENT RECOGNITIONS

### 2020 Zamorano University Research Interns



Back Row: Ruben Vinueza (Dharmendra Mishra Lab), Henry Cocon (Steve Lindemann Lab), Roberto Cheing (Bruce Applegate Lab), Manuel Padilla (Jen-Yi Huang Lab), Enrique Bogran (Lavanya Reddivari Lab)

Front and Center: Lia Rosa (Betty Feng Lab)

### Maria Belen Salazar Tijerno

International Society of Beverage Technologist (ISBT) Scholarship, Fall 2019

### Adrienne Voelker

Bilsland Fellows Award, May 2020

### Yizhe "Bruce" Zhang

Purdue Interdisciplinary Graduate Programs Interdisciplinary Research Award, Certificate of Excellence, May 2019

### Jingfan Chen

Purdue Research Foundation Research Grant, June 2020

Cereal & Grain Association Student Research Paper Competition, 3rd Place, 2019

### Dennis Cladis

American Society for Nutrition Emerging Leaders in Nutrition Poster competition, Dietary Bioactive Components Research Interest Section, Runner-up, Summer 2019

Vitamin World Travel Award for Research Excellence, Summer 2019

### Sarah Corwin

Cereal and Grains Association, Product Development Competition, Finalist, 2019

Purdue Agriculture and Biological Engineering Graduate Industrial Research Symposium, 2nd Place, 2019

American Society of Baking Product Development Competition, Finalist, 2019

### Anna Hayes

Institute of Food Technologists (IFT) Carbohydrate Division, Outstanding Service Award, June 2019

Purdue Graduate Student Government Travel Grant Recipient (Top Tier), Fall 2019

### Morgan Malm

Indiana Statehouse Honoree-Soybean Product Innovation Award, January 2020

USDA Biopreferred Stakeholder Summit invited display of soy-based drinking straw, September 2019



Ph.D. Student Morgan Malm showcases her award-winning soy-based drinking straw with Indiana Soybean Alliance Board Director Nancy Cline at the 2019 USDA Biopreferred Stakeholder Summit in Atlanta, Georgia.

### Halak Mehta

Institute of Food Technologists (IFT) Carbohydrate Division, Outstanding Service Award, June 2019

### Carine Nkemngong

Food Science Department B.J. Liska Outstanding Teaching Assistant Award, Fall 2019 Early in the year 2020, the world as we knew it changed due to the coronavirus global pandemic. COVID-19 caused many changes for the second half of spring 2020 semester. Instruction quickly moved to online and virtual formats after spring break. Students were encouraged to stay or go home if possible. Travel came to a screeching halt, events were cancelled, and non-essential university employees were asked to work remotely as much as possible. As uncertainty grew, in the spirit of Purdue University, Food Science Department faculty and staff persistently took some giant leaps. They jumped into action rethinking and reformatting spring and summer conferences, pivoting research and extension priorities to address COVID-19, and reformatting instruction for the coming academic year. Today, we pledge to protect Purdue!



### Phi Tau Sigma Honor Society, Hoosier Chapter 2019-20 Executive Board

President: Sarah Corwin, sgafter@purdue.edu

Treasurer: Anbuhkani Muniandy, amunian@purdue.edu Advisor: Dr. Suzanne Nielsen, nielsens@purdue.edu

### **New members:**

Fall 2019 Tressie Barrett Manoj Sawale Halak Mehta Iose Bonilla Oliva Fernando Cantarero Rivera Arianna Romero Marcia

Spring 2020 Oluwatoyin "Ola" Sangokunle Travest Woodbury Carine Nkemngong





### Phi Tau Sigma Outstanding Chapter of the Year Award: Purdue University "Hoosier" Chapter

Phi Tau Sigma Hoosier Chapter has continued to expand its activities and commitment to excellence. Currently, there are 27 members (8 new initiates; 18 students, 4 post-docs, 5 faculty members) in the Hoosier Chapter. Our members have been recognized for a diverse array of achievements, such as being named recipients of the Phi Tau Sigma Student Achievement Scholarship, advancing to the national competition for IFT College Bowl, being named recipients of student mentorship awards and the 150th Anniversary Professor at Purdue University, among others. Each year, the Phi Tau Sigma Hoosier Chapter has held an annual members luncheon, one or more lunch seminars with guest speakers from the food industry and academia, as well as mentorship events bridging graduate students with undergraduates and volunteering activities. Unfortunately, COVID-19 has forced a cancellation of many of our professional and annual events in early 2020, but we are eager to resume our activities once this difficult time passes. In the future, the Hoosier Chapter aims to continue organizing and improving upon our events, with a special focus on encouraging increased membership in Phi Tau Sigma and implementing more service-related events. Through these efforts, the Phi Tau Sigma Hoosier Chapter will continually strive to fulfill the mission of Phi Tau Sigma – to raise the stature and recognize scholarly achievements of the Food Science and Technology profession.

### **Institute of Food Technologist Student Association**, **Purdue Chapter**

### 2019-20 Executive Board

President: Morgan Malm Vice President: Noah Van Horn

Secretary: Brie Britton Treasurer: Erin Sukala Advisors: Dr. Joe Kokini and

Laurie Van Keppel

### 2019-20 College Bowl Team

Captain: Pat Polowsky Monique Chung Renner Guntz Maddie Harper Erin Sukala Noah Van Horn

### **Food Science Graduate Student Association**

### 2019-20 Executive Board

Morgan Malm (President) Brie Britton (Vice President) Carine Nkemngong (Secretary) Travest Woodbury (Treasurer) Hansel Mina (Social Chair) Gerladine Tembo (PGSG senator) Advisor: Dr. Suzanne Nielsen



# STUDENT RECOGNITIONS continued

### 2019-20 Product Development Teams

# American Society of Baking Competition Team Places 3rd at National Competition

Purdue Food Science students, Joseph King, Anbuhkani (Connie) Muniandy and Julia Schmidt, placed 3rd in the American Society of Baking Product Development Competition. As finalists in the largest product development competition in the U.S., they also received an all-expense paid trip to the conference and received a grand total of \$6,000 worth of scholarships. The competition this year required contestants to use an alternative novel protein to create a shelf stable baked product. The team created Herby Pie, a high-protein mini pie featuring



Baking Rock Stars, Julia Schmidt, Connie Muniandy and Joseph King, 3rd place at national competition.

hemp protein. The product consists of a vanilla-infused hemp protein shortcrust pastry encasing a sweet filling made from chocolate, walnuts, hemp protein, and bourbon extract. Herby pie is a bite-sized take on a classic Kentucky dessert that capitalizes on the nutty flavor and intense green color of hemp protein. 12 teams participated in the competition this year and 3 were selected to compete in the finals in Chicago.

# **Institute of Food Technologists Student Association & Mars Competition Team - National Finalist**

A team of Purdue students led by **Noah Van Horn** developed Bees & Rice, a rice-based porridge with honey and will compete in the national finals at the annual Institute of Food Technologist conference in July 2020 which is being held virtually this year due to the coronavirus pandemic. Noah's teammates include fellow food science students **Frankie Berry, Kelden Cook, Alyson McGovern, Tejashree Shah, Sangavi Subramani** and **Yumi Higashiyama** (nutrition major).

### Institute of Food Technologists Student Association, Smart Snacks for Kids Competition Teams

Three teams of food science students submitted proposals for the following concepts:

- Cosmochi: a mochi snack product flavored with lemon curd, carrot, and cranberry led by Kendall Green with team members Travis Woodbury, Maddie Harper, Marcellus Hammel, and Clarissa Vasquez.
- 2. String Hoppers: a cinnamon rice cracker topped with yogurt and coconut led by Erica Grush with team members Kassidy Brown, Ryan Chen and Matthew Kittaka.
- Super Stackers: a whole wheat cracker packaged with strawberry white chocolate yogurt and dehydrated strawberry powder for dipping led by Christina Mussmann with team members Amanda DuMerer, Isabell Mahin, Kyle Song, and Alecia Wichlinski.

### **Food Science Club Officers**

President: Noah Van Horn Vice President: Erin Sukala Secretary: Micah Lehe Treasurer: Olivea Glaser Ag Council: Kelden Cook

Event Committee Chair: Alyson

McGovern

Advisor: Laurie Van Keppel



Food Science Club officers planning meeting. **Left to right:** Olivea Glaser, Erin Sukala, Noah Van Horn, Keldon Cook, Micah Lehe, and Alyson McGovern

### Food Science Outstanding Undergraduate Student Recognition

Freshman: Isabell Mahin Sophomore: Joseph Gleason

Junior: Erin Sukala Senior: Joe Brisco

# SCHOLARSHIPS

55%

of food science students awarded scholarships from the University, College of Agriculture and Department of Food Science

38%

awarded scholarships from Food Science Department Scholarships (100% who applied)

**TOTAL** 

\$158,250

Thanks to our generous donors

### \*Alumni & Friends Scholarship

(See engraved bricks in Nelson Hall lobby for individual donors who make this fund possible. If you would like to donate to this fund and have your name engraved on a brick in the lobby of Nelson Hall, contact foodsci@purdue.edu.) Elizabeth DeAcetis Isabell Mahin Alyson McGovern Jordan A'Lee McGrue

### Fred Babel Scholarship

Renee Stieby

Jessica Armstrong Kassidy Brown Isabella Bryan Lindsey Bullerman Molly Carroll Keldon Cook Elise Covrett Tess Dobosz Amanda DuMerer Caroline Edmondson Joseph Gleason Alexander Greenfield Erica Grush Madeline Harper Zachery Hoag Yufan Hu Lauren Kumpf Micah Lehe Isabell Mahin Samantha Matisko Madison Mehringer **Heather Milliron** Christina Mussmann Natalia Rodriguez Julia Schmidt Ireland Stevens Renee Stieby Erin Sukala Noah Van Horn Rowan Wallar Neil Zhao Haohui Zhu

### Gary & Mary Chenoweth Scholarship

Madeline Trevelino

### Arnold "Bud" & Cathy Denton Scholarship

Kasssidy Brown Isabella Bryan Emily Chuang Keldon Cook Amanda DuMerer Kendall Green Erica Grush Madeline Harper Madison Kenyon Lauren Kumpf Christina Mussmann Bridget Owens Natalia Rodriguez Madeline Trevelino Noah Van Horn Rowan Wallar Jillian Zurcher

### Gary & Sara Hellmich Scholarship

Alecia Wichlinski

### Food Science Department Scholarship

Margaret "Meg" Adams Olivea Glaser Ryann Laky

### **Imran Kazem Scholarship**

Jillian Zurcher

### Lessa Martin & James Kincaid Scholarship

Madison Mehringer

### Peter Mauger & Sarah Naas Mauger Scholarship

Jessica Armstrong Audrey Dirksen Claire Dirksen Adam Spurgeon

### Sarah Naas Mauger Veil Scholarship

Adam Spurgeon Clarissa Vasquez Irene Zou

### **Red Gold Scholarship**

Renner Guntz Ashley Gordish Madison Kenyon Isabell Mahin

### **Ronald Rice Scholarship**

Molly Carroll Caroline Edmondson Joseph Gleason Kendall Green Owen Vaughn Clarissa Vasquez Irene Zou

### Kathryn "Katie" Rippel Scholarship

Jillian Zurcher

## Norman & Carole Thomas Scholarship

Tejashree Shah Erin Sukala

### John & Beverly Wisler Scholarship

Matthew Kittaka Heather Milliron

### **Red Gold Internship Scholars**

Christina Mussmann Erin Sukala

### **Purdue's Top Merit Scholarship**

~20% of food science students receive Purdue's top academic merit scholarships

# **GRADUATES MOVING ON**

# Degrees Awarded

### **August 2019**

Miguel Alvarez (M.S. mentor: Yuan Yao) Yezhi Fu (Ph.D. mentor: Yuan Yao)

Smith Nkhata (Ph.D. mentors: Mario Ferruzzi & Bruce Hamaker)

Leigh Robison Schmidt (Ph.D. mentor: Bruce Hamaker)



Nuseybe Bulut (M.S. mentor: Bruce Hamaker) Gabriela Calzada Luna (M.S. mentor: Andrea Liceaga) Rachel Jackson (M.S. mentor: Bruce Hamaker) Jongbin Lim (Ph.D. mentor: Bruce Hamaker) Moustapha Moussa (Ph.D. mentor: Bruce Hamaker) Tahrima Rouf (Ph.D. mentor: Jozef Kokini) Uriel Urbizo Reyes (M.S. mentor: Andrea Liceaga)

### **May 2020**

Ahmad Al-Eissa (M.S. mentor Jen-Yi Huang) Yiwen Bao (M.S. mentor Jen-Yi Huang) Tressie Barrett (M.S. mentor: Betty Feng) Jose Bonilla Oliva (Ph.D. mentor: Jozef Kokini) Dennis Cladis (Ph.D. mentor: Kee-Hong Kim) Joseph King (M.S. mentor: Andrea Liceaga)

Maria "Belen" Salazar Tijerino (M.S. mentor Jen-Yi Huang)

Tongyu "Sophie" Wu (Ph.D. mentor: Haley Oliver)



### **B.S. Graduates**

Kyra Ball
Emmanuel "Joe" Brisco
Haotian Chang
Zhuoran Chen
Xiang Cheng
Emily Chuang
Elise Covrett
Tess Dobosz
Tara Gerig
Olivea Glaser
Erica Grush
Renner Guntz
Rebecca Jarboe
Juna Johnson

Lauren Kumpf
Ryann Laky
Dongxuan Liu
Yi Liu
Samantha Mitisko
Lauren Neuwirth
Reed Nicley
Bridget Owens
Xiaolin Qiu
Mino Rafaella
Zhiyang "Stan" Tu
Noah Van Horn
Yue Yu

Yue Yu Zerui Zhou



Front row Left to right: Dongxuan Liu, Zhuoran Chen, Daphne Pons de La Garza (nutrition science dept. student), Rafaella Mino, Juna Johnson, Elise Covrett, Tess Dobosz,

Middle row left to right: Yue Yu, Ryann Laky, Emily Chuang, Samantha Matisko, Bridget Owens, Renner Guntz, Lauren Neuwirth, Lauren Kumpf, Rebecca Jarboe, Olivea Glaser

Back row left to right: Xiaolin Qiu, Zerui Zhou, Noah Van Horn, Tara Gerig, Erica Grush, Emmanuel "Joe" Brisco, Reed Nicley, Kyra Ball, Zhiyang "Stan" Tu, Haotian Chang, Yi "Tim" Liu, Xiang "Chase" Cheng

# Thanks for our supporters

Thank you to our alumni, donors, friends, and industry professionals who support the Department of Food Science with your time, talent, and resources. You all are an important factor in making this department, our students, and ultimately the world's food supply better. Whether you spoke in a class, mentored a student, participated in Food Science Student Professional Development Days, encouraged a prospective student to consider our academic program, hired our students for internships and full-time positions, sponsored faculty research, are a member of our centers or Industrial Associates group, or gave a donation ... we say a big THANK YOU!

### 2019 Food Science Professional

**Development Days Participants** Abbott Labs Ameriqual Artemis International Clason Ouality Chocolates Conagra Brands Doehler North America **Endangered Species Chocolate** Farmer's Fridge General Mills Givaudan Greenleaf Indiana State Department of Agriculture Institute of Food Technologists, **Indiana Section Integrated Project Management** Company Morgan Foods Nestle Beverages Newlyweds Foods North Cliff Consultants

Pepsico

Red Gold

Sensient Colors

Synergy Flavors Tetra Pak US Foods Vivolac Cultures White Castle Wolf Group

### 2019-20 Industrial Associates Member Companies

Cargill
Conagra Brands
Danone North America
General Mills
Heartland Food Products Group
Hershey's
Kalsec
Mead Johnson
Morgan Foods
Nestle R&D Center
PacMoore
PepsiCo
Red Gold
Skidmore Sales & Distributing Co.
Verdure Sciences

### **B.S. Class of '20 Stats**

(based on US citizens)

12%

Continuing education

88%

Accepted industry jobs

100%

Placement

71%

Did research

**53%** 

Had an international experience

100%

Had a professional experience (includes military service)

53%

Had one internship

24%

Had two internships

24%

Had three internships

Average Salary for B.S. \$53,000

# Food Science Vision, Mission, and Values

### **VISION**

To be the global leader in transformation of lives through the science of food.

### **MISSION**

We engage in discovery-driven activities leading to innovative learning and outreach that:

- Enhance health, safety, quality, and sustainability of foods;
- Prepare the next generation of leaders in food science; and
- · Address stakeholder needs.

### **VALUES**

Next stop: We are the Department of Food Science at Purdue University – a community committed to excellence in all aspects of the land-grant mission; teaching, outreach and discovery. We seek to embody our mission, vision and values statements, not in words but through our actions. As such, this values statement communicates who we are, and strive to be.

As a team, we collaborate with respect but challenge each other to defend what we believe; understanding that healthy debate leads to stronger results. With challenge comes innovation in discovery, critical thinking in learning and programs with lasting impact. Through this process we produce leaders in thought and action.

Recognizing that the root and very strength of our discipline is diversity, we affirm this by thinking globally and embracing differences. Our commitment to respect for all allows freedom of thought, integrity of science and diversity of people.

With a passion for improving the lives and livelihood of our stakeholders, we resolve that these values will be used to guide our mission and inspire our actions.



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