



What we do & Why it matters

Food Science and Human Nutrition | fshn.illinois.edu

The Department of Food Science and Human Nutrition implements research, education, and outreach programs designed to promote a safe, nutritious, accessible, and affordable food supply that enhances human health. The basic human need for high-quality foods for optimal health and wellness drives the core of student education as stellar faculty and exceptional students work collectively toward learning, discovering, and disseminating new knowledge and in applying novel technologies in dietetics, food science, hospitality management, and human nutrition.

NICKI ENGESETH (professor; department head)

Dr. Engeseth works to ensure optimal food quality and nutritional value of the food supply by investigating the impact of environmental growing conditions, processing, and storage on produce and oilseed quality, with emphasis on enzymatic action, lipids, and natural antioxidants.

JAIME AMENGUAL TERRASA (associate professor)

Dr. Amengual studies how carotenoids and vitamin A affect lipid metabolism, and how these nutrients contribute to the reduction of cardiovascular disease, atherosclerosis, and obesity. Using animal models and cell culture techniques, he explores the molecular mechanisms by which these bioactive compounds regulate cellular metabolism.

CLAUDIA ASENSIO (research assistant professor)

Dr. Claudia Asensio focuses her research on exploring new sources of lipidic foods, specifically edible oils and other fat-rich food products. Her work investigates the quality and stability of these fats, looking for innovative ways to improve their extraction and preservation. Dr. Asensio is particularly interested in finding alternative natural products, such as antioxidants, to enhance the longevity and nutritional value of lipidic foods. She is passionate about understanding the sensory impact of lipid quality including how fats affect food taste, texture, and overall sensory experience.

PRATIK BANERJEE (associate professor; associate head for graduate programs)

Dr. Banerjee's research program is dedicated to the study of microorganisms, both beneficial and harmful, that inhabit our food and food environments. His work focuses on safeguarding the food supply by identifying critical factors that contribute to the spread of foodborne pathogens. His laboratory employs advanced molecular methods, such as sequencing, to characterize pathogenic microorganisms, their virulence or antimicrobial resistance genes, and toxins. He also develops novel biosensors for the rapid detection of pathogens that pose health risks and threaten food safety. Additionally, Dr. Banerjee's research explores the interaction between the gut microbiome and probiotics, aiming to create dietary interventions for chronic and infectious diseases. His outreach activities include developing feasible science-based strategies to help food retailers and producers comply with food safety regulations and protect public health.

DAWN BOHN (teaching professor; Faculty and Academic Engagement director, Siebel Center for Design)

As a Teaching Professor, Dr. Bohn strives to offer her students high-level experiential learning opportunities before they enter the food industry. Her student-centered courses tackle complex and multifaceted challenges in food science and ingredient technology to develop new food and beverage products. As the Director of Faculty and Academic Engagement for the Illinois. Siebel Center for Design, Dr. Bohn aims to support, advocate for, and amplify interdisciplinary human-centered innovation, education, community, and research activities that SCD Affiliates lead on our campus, with peer institutions, and with our community and industry partners.

JORDEN BROTHERTON (clinical associate professor)

Mr. Brotherton prepares hospitality management students to become industry leaders by providing hands-on experiential learning opportunities. While operating an on-campus café and a fine dining restaurant, he guides students through the application of business strategy, food science principles, and service excellence.

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KEITH CADWALLADER (professor)

Dr. Cadwallader contributes to the understanding of fundamental and applied flavor chemistry and analysis. He identifies and characterizes key flavor (aroma) compounds, determines the interaction of flavor compounds with food matrix components, and develops methods to monitor and predict flavor changes in foods during processing and storage.

HONG CHEN (associate professor)

Dr. Chen's research explores the molecular, biochemical, and nutrigenomic interactions between diet, and the gut microbiome, with a focus on maintaining gut homeostasis. By advancing our understanding of gut microbial communities in the colon, this research provides foundations for managing gut inflammation and preventing the development of colon cancer.

SUSAN COPPESS (Nutrition and Health advisor; academic collaborations project manager; associate head for undergraduate programs)

Ms. Coppess is dedicated to supporting student success in the Department of Food Science and Human Nutrition (FSHN). As an academic advisor for Nutrition & Health, she helps students develop an academic plan that aligns with their professional goals and connects them with campus resources and co-curricular experiences tailored to their individual needs. As an instructor for FSHN first-year experiences courses, she helps students navigate their first semester by fostering a welcoming academic community and empowering them to actively explore and participate on campus.

JILL CRAFT (clinical associate professor; Hospitality Management program advisor)

Ms. Craft ensures that hospitality management students develop problem-solving skills to critically analyze managerial issues and implement practical solutions. She teaches, develops, mentors, and advises students to be successful managers and hospitality industry professionals.

ELVIRA de MEJIA (professor)

Dr. de Mejia investigates bioactive peptides and proteins in foods that promote health benefits for reducing inflammation, markers of type 2 diabetes, cancer, and cardiovascular disease risk. She identifies and characterizes the functional properties of food components, notably flavonoids in ethnic teas, herbs, and berries.

SHARON DONOVAN (professor, FSHN & Center for Advanced Study; Personalized Nutrition Initiative director; Melissa M. Noel Endowed Chair in Nutrition and Health)

The Donovan laboratory conducts basic and translational research in the area of pediatric nutrition. During this phase of life, proper nutrition is of key importance for growth, development and long-term functional outcomes, such as cognition and immune response. On-going work in the lab is focusing on optimizing intestinal and cognitive development of neonates, development of the gut microbiome and prevention of childhood obesity.

JOHN ERDMAN (professor emeritus)

Dr. Erdman studies how dietary changes, such as the consumption of tomato products, reduces the risk of prostate cancer. He evaluates the metabolism of the carotenoid lycopene, the main red color in tomatoes. His team uses ultrasound techniques for early detection of prostate cancer and tumor growth as well as monitoring development of non-alcohol liver disease. He also studies how lutein, another carotenoid pigment, and vitamin E impacts brain development and function.

TONI GIST (clinical assistant professor)

Ms. Gist designs and leads large-enrollment undergraduate courses that serve as critical entry points into food science, nutrition, and health education. Her work focuses on transforming required courses into high-impact learning environments that support student success, belonging, and persistence across majors. Through partnerships with Illini Fuel Sports Nutrition, the Gies College of Business, and global campus collaborators, she connects classroom learning to real-world application, professional skill-building, and community engagement. By integrating evidence-based instructional design, accessible AI tools, and immersive technologies such as virtual reality, her teaching strengthens departmental reach, improves access for diverse learners, and advances innovative, scalable models for undergraduate education.

SAIMA HASNIN (assistant professor)

Early care and education settings offer ideal environments for promoting healthy eating habits in children. Dr. Hasnin designs and evaluates child nutrition policies and programs for childcare educators and families. Through her work, Dr. Hasnin aims to ensure that all children have access to sustainable childcare food systems, high-quality nutrition, and healthy foods where they eat, learn, and play.

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WILLIAM HELFERICH (professor; Botanical Estrogen Research Center director)

Dr. Helferich investigates diet and breast cancer growth and progression with a specific interest on dietary components such as the soy estrogens, estrogenic dietary supplements, and how thermally abused oil can alter breast cancer metastasis using preclinical models.

KRYSTAL HODGE (assistant professor)

Dr. Hodge investigates how community nutrition interventions including educational programs and policy, education and assisting Extension Educators with the development and evaluation of evidence-based educational programs, systems, and environmental interventions affect food choices, dietary intake and health. Her research focuses on audiences who are at high-risk for nutrition-related adverse health outcomes. She uses quantitative and qualitative research methods to assess participant and program needs, use of existing resources and the impact of program activities on participant knowledge, attitudes, and behaviors. Her outreach activities involve community nutrition.

HANNAH HOLSCHER (professor)

Dr. Holscher leads research at the intersection of nutrition, the gut microbiome, and data science to understand how the foods we eat influence health. Her lab combines clinical research and advanced analytics to uncover why individuals respond differently to the same foods. This work informs dietary recommendations and advances personalized nutrition strategies to improve health and well-being.

YONG-SU JIN (professor)

Dr. Jin is pioneering the use of engineered microorganisms to deliver bioactive molecules and therapeutic proteins into the gut to prevent and treat gastrointestinal disease. He advances the use of engineered microorganisms for safe and sustainable production of value-added products from renewable biomass. He also optimizes genetic and metabolic processes within cells for enhanced production of target products while minimizing production of byproducts and waste.

JUSTINE KARDUCK (clinical associate professor; Didactic program director; Dietetics and Nutrition advisor)

Dr. Karduck directs a top-ranked accredited Didactic Program in Dietetics, whose graduates achieve a 100% first-year pass rate on the national CDR Registered Dietitian Certification Exam. As a former clinical dietitian and certified diabetes care and education specialist, she utilizes many years of experience in the field to train future dietitians.

SIHUI MA (teaching associate professor; Food Science program advisor)

Dr. Ma is dedicated to empowering young minds through quality education and personalized guidance to navigate their academic journeys and prepare for their professional lives in an ever-changing world. Striving to foster a lifelong love of learning in our students, she tailors pedagogical methods to meet the diverse needs of our student body in teaching freshman- and sophomore-level food science professional development courses, the science of food preparation, and the science of fermented food and beverage lab. She also enjoys supporting food science undergraduate students and helping students set and achieve their academic and career goals. In addition to teaching and advising, she works with faculty to prepare the annual assessment reports of the food science undergraduate program.

BRAULIO MACIAS RODRIGUEZ (assistant professor)

Dr. Macias Rodriguez's group studies how material structure, function, and processes relate to improving and developing nutritious, functional, and sustainable foods. Using soft matter methods, they assemble edible and biological components into novel structures. Their current research focuses on assembling phase-change materials, colloidal and polymeric hydrogels, and oleogels, and flow-induced structuring of biomaterials.

ZEYNEP MADAK-ERDOGAN (professor; Sylvia D. Stroup Scholar)

Dr. Madak-Erdogan's lab investigates how environmental factors and metabolism affect cancer outcomes and maternal health. Her team develops advanced computational methods to analyze how neighborhood characteristics, stress, and chemical exposures influence tumor biology and maternal-infant health outcomes. Their research has revealed how diet and nutrition affect breast cancer treatment success and identified stress signaling mechanisms in aggressive cancers. These discoveries are leading to innovative dietary and therapeutic approaches to improve cancer treatment outcomes and maternal wellbeing.

JESSICA MADSON (clinical associate professor; director of graduate Dietetic Internship)

Dr. Madson mentors graduate students who participate in the dietetic internship and are pursuing the career pathway to registered dietitian nutritionist credentialing. She makes sure all interns receive the highest level of practical work-related experiences to achieve all learning competencies for success in future careers as nutrition professionals. She secures supervised practice sites that meet and exceed standards set forth by the accrediting body for the profession.

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MICHAEL MILLER (professor)

Dr. Miller solves problems related to various aspects of microbial metabolism and fermentation. He evaluates the microbial metabolism of dietary components in the gut to maximize health benefits for humans. He identifies microbial metabolites in fermented foods responsible for their unique health benefits. Lastly, he uses systems biology approaches to engineer fermentation microorganisms to produce value added products and designer probiotics.

MANABU NAKAMURA (associate professor)

Dr. Nakamura's team has been developing and propagating EMPOWER, an innovative dietary weight-loss program to reach out to underserved populations. The EMPOWER program can provide a cure to major chronic diseases including heart disease, stroke, diabetes and hypertension that cause premature death to many.

SHELLY NICKOLS-RICHARDSON (professor)

Dr. Nickols-Richardson helps individuals and families manage body weight and prevent obesity, metabolic syndrome, and osteoporosis through a variety of dietary, physical activity, and nutrition education approaches. She promotes dietary guidelines through community-based interventions and explores consumer behaviors around vegetable choice, preparation, and consumption.

OGUZ KAAZ OZTURK (assistant professor)

Dr. Ozturk's interdisciplinary research leverages novel technologies, including microfluidization, ultrasound, and cold atmospheric plasma, to enhance the functional properties of proteins and protein-rich byproducts, transforming them into valuable components for innovative formulations and processes. In addition, he employs advanced food processing techniques such as high-moisture extrusion and 3D printing to develop plant- and microalgae-based alternative products. By focusing on protein functionalization and recovery and enhancement of proteins from food byproducts, his research minimizes waste, adds value to underutilized materials, and contributes to sustainable food production. Through a deep understanding of the structure-function relationships of food ingredients, his lab aims to develop healthier, higher-quality foods that meet evolving consumer needs while promoting resource efficiency and sustainability in food systems.

YUAN-XIANG PAN (professor)

Dr. Pan explores how epigenetic regulation shapes physiological functions and drives chronic disease development. His research focuses on identifying novel epigenomic pathways to enable personalized nutritional interventions, ultimately promoting optimal health and well-being.

M. YANINA PEPINO (professor)

Dr. Pepino's research advances our understanding of how flavor perception influences ingestive behavior and nutrient metabolism. She investigates how bariatric surgery-induced weight loss affects flavor perception, eating, and drinking and how these changes alter the body's handling of alcohol and our subjective experience of it.

CARTER PHILLIPS (quality food manager)

Chef Carter develops future leaders in the food and hospitality industry through immersive, real-world learning experiences. Using two student-run businesses (Bevier Café and the Spice Box) he provides hands-on training and leadership development in environments where students are responsible for decision-making, teamwork, and professional standards. His courses intentionally integrate theory with practice, ensuring students have a strong foundation in food science, food safety, and ethical leadership. Chef Carter emphasizes the role of hospitality professionals as stewards of both community and sustainability. Through the *Everybody Eats* program; he helps fight food insecurity on campus and he enjoys mentoring students in sustainable food production using an aquaponics system. Hospitality is about making people feel seen, valued and welcome. It's these skills that will serve his students wherever their careers take them.

MARCIA MONACO SIEGEL (research assistant professor)

Dr. Siegel's research centers on the development of evidence-based nutritional strategies aimed at optimizing infant health and early-life outcomes. Her work examines bioactive components of human breast milk and elucidates their mechanistic roles in gastrointestinal maturation and immune system development, with the goal of informing nutritional interventions that support healthy growth and disease resilience.

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MATTHEW STASIEWICZ (associate professor)

Dr. Stasiewicz uses math and models to help people make better food safety decisions. His group uses statistics, computer simulations, and innovative laboratory methods to advance food safety risk assessment and management. The broad goal is to help the food system feed more people without them getting sick.

PAWAN TAKHAR (professor)

Dr. Takhar utilizes polymer mechanics coupled with the movement of heat, fluids and species in porous biopolymeric matrices. He develops and solves multiscale mathematical models to improve the quality and safety of food and biomaterials.

PABLO TORRES AGUILAR (assistant professor)

Dr. Torres Aguilar's research focuses on food security at the local, national, and international level. His position as Army Reservist has allowed him to understand the limitations and nutritional needs of enlisted soldiers resulting in reduced food security for them and their families. He uses survey tools, nutritional assessments, and biochemical indicators to measure nutritional adequacy and creates targeted public health interventions to reduce the burden of food insecurity.

DAMIR TORRICO (assistant professor)

Dr. Torrico's research focuses on innovative approaches to understanding and enhancing consumer experiences with food products. His work integrates physiological responses (biometrics) to predict consumer preferences and emotional reactions to foods. He has also developed advanced methodologies to explore how environmental factors, such as those simulated using virtual and augmented reality technologies, influence the tasting experiences of products such as wine, chocolate, and other foods. Moreover, Dr. Torrico's expertise extends to food product innovation, particularly in developing healthier food options with reduced sugar and sodium. His current research focuses on fermentation processes to better understand and optimize the sensory properties of plant-based products.

HAZAL TURASAN OZTURK (teaching assistant professor)

Dr. Turasan's research focuses on developing biodegradable biosensor platforms using plant-based sources to detect food allergens and toxins, with the goal of enhancing food safety. In addition to her research, Dr. Turasan Ozturk teaches food processing and technology courses at both the undergraduate and graduate levels, where she is passionate about inspiring students and helping them apply the latest techniques in food science and technology.

YI-CHENG WANG (assistant professor)

Dr. Wang develops innovative engineering technologies to improve food quality, food safety, and overall sustainability. These include non-thermal technologies for food processing and storage, advanced sensing systems for monitoring food and beverage quality and detecting contaminants, and the transformation of agricultural and food waste into value-added materials and devices.

CHANGMOU XU (assistant professor)

Dr. Xu uses AI and data science to develop sustainable and efficient food processing systems. His research transforms agricultural products and by-products into high-value, nutritious foods and ingredients using AI-driven technologies such as 3D food printing and smart spray drying. This work improves food quality and nutrition, reduces food waste, and helps build more resilient and sustainable food systems that benefit both industry and consumers.

