



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 and 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 (assistant 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.

ANNA ARTHUR PARKER (assistant professor and Sylvia D. Stroup Scholar in Nutrition and Cancer)

Dr. Arthur's research program is working to improve the quality of life, overall health, and longevity of adults diagnosed with cancer through nutrition. She specifically focuses on the role of nutrition in determining health outcomes after cancer diagnosis and to elucidate the underlying biological mechanisms. Her ultimate goal is for her research findings to inform the development of new or the evolution of current dietary recommendations, clinical guidelines, and medical nutrition therapies for cancer patients and survivors.

PRATIK BANERJEE (associate professor)

Dr. Banerjee investigates how different environmental sources contribute to the spread of foodborne pathogens resulting in population health risks and compromising food safety. He uses molecular methods for rapid detection, screening, and characterization of pathogenic microorganisms, their genes (conferring virulence or resistance to antimicrobials), or toxins. He also develops biosensors for the rapid detection of pathogens. His outreach activities include developing feasible science-based strategies to help food retailers and producers comply with food safety regulations and protect public health.

HANS BLASCHEK (professor emeritus)

Dr. Blaschek manipulates the genes of microorganisms for biotechnological applications, examines the feasibility of using food processing co-products as a raw material for value-added biotransformation, and develops integrated fermentation systems for biobutanol production and recovery. He is an expert in the commercialization of butanol fermentation using the solvent-producing clostridia.

DAWN BOHN (teaching associate professor)

Dr. Bohn aims to provide high-level experiential learning opportunities for her students prior to entering the food industry and she encourages them to solve complex food science and ingredient technology challenges while developing novel food products. As the director of the online M.S. program, she explores and utilizes online education best practices in order to deliver a high quality, accessible program to working professionals who are balancing important professional and personal commitments.

JORDEN BROTHERTON (clinical assistant 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.

What we do & Why it matters

Food Science and Human Nutrition

TONI BURKHALTER (senior instructor)

Ms. Burkhalter uses her enthusiasm and knowledge to inspire undergraduate students in the areas of health, nutrition, kinesiology, and instructional design. In addition to teaching a Contemporary Nutrition course, she has developed study abroad experiences to the Mediterranean, a human nutrition internship partnering with NCAA athletes, a “hot topics in sports nutrition” online course, and instructional leadership courses. When she is not teaching or developing courses, she advises the undergraduate Human Nutrition students.

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 stabilize labile potent flavor compounds for use in foods.

KAREN CHAPMAN-NOVAKOFSKI (professor and Extension specialist)

Dr. Chapman-Novakofski investigates how food choice impacts health. Through classes, web applications, and mobile apps, she demonstrates how understanding behavior is key to supporting those with chronic diseases in making better choices. Her interests include diabetes, bone health, healthy aging, and consumer choices.

HONG CHEN (associate professor)

Dr. Chen focuses on molecular, biochemical, and nutrigenomic research that advances the knowledge of how diets affect each individual’s epigenome. Understanding nutrient regulation of genes during cancer development improves precision nutritional care for better patient outcomes.

JILL CRAFT (clinical associate professor)

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 and Melissa M. Noel Endowed Chair in Nutrition and Health)

The first 1,000 days of life, spanning from conception until age 2, are of critical importance to short- and long-term health outcomes for infants and children. Dr. Donovan investigates some of the most pressing health issues facing children and families, including promoting a healthy gut, brain, and microbiome development through diet; preventing childhood obesity; and picky eating behaviors.

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 impact brain development and function.

HAO FENG (professor)

Dr. Feng investigates new physical and chemical treatments to increase food safety and quality. He explores how innovative food processing methods contribute to enhanced nutrition in foods, and how novel engineering approaches improve processing efficiency sustainability and product quality.

BILL HELFERICH (professor and Diet, Women’s Health, and Aging Professor)

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

What we do & Why it matters

Food Science and Human Nutrition

HANNAH HOLSCHER (assistant professor)

Dr. Holscher studies how food influences gut microbes and human health. Using big data approaches, she studies the link between diet, gut microbes, and health. Her work is important because it informs dietary recommendations to improve health and well-being.

ELIZABETH JEFFERY (professor emerita)

Dr. Jeffery studies the mechanisms by which cruciferous vegetables, such as broccoli, kale and Brussels sprouts, lower the risk of developing cancers, including liver, prostate, and colorectal cancer. She focuses on bioavailability, including the role of the microbiome, as well as how these vegetables enhance the immune system, preventing cancers and helping to maintain health during aging.

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 assistant professor)

Dr. Karduck directs a top-ranked accredited Didactic Program in Dietetics whose graduates achieve a 98% first-year pass rate on the national 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 registered dietitian nutritionists.

SOO-YEUN LEE (professor)

Dr. S-Y Lee investigates food systems intended for enhancing consumer health, such as low sodium and low sugar foods without compromising taste. She relates mealtime behavior and genetic predisposition to picky eating in toddlers to foster healthy eaters. Although her main mantra is "Taste is King," at the core of her research, the focus is on health.

YOUNGSOO LEE (associate professor)

Dr. Y Lee designs healthier food products by studying food processing and food engineering. His current research focuses on novel technologies to incorporate beneficial bioactive compounds into foods to improve health. He is also an expert in spray drying, especially working on improving spray nozzle design to enhance its function and efficiency.

ZEYNEP MADAK-ERDOGAN (associate professor)

Dr. Madak-Erdogan improves the quality of life for cancer survivors by understanding how environmental exposures and metabolic changes affect tumor biology. Her lab uses state-of-art computational data analysis methods, from patient samples, animal models, and cell lines to understand the molecular basis of metabolic regulation by nuclear receptors and therapy resistance. Impact of her research is novel ways to treat already metastasized breast tumors and reduce incidence of prostate cancer by life style changes.

JESSICA MADSON (clinical assistant professor)

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.

MICHAEL MILLER (professor)

Dr. Miller solves problems related to various aspects of fermentation. He develops strategies to improve the safety of fermented dairy products, especially Hispanic-style cheeses. He evaluates the microbial metabolism of dietary components in the gut to maximize health benefits for humans. He develops contamination solutions for industrial fermentations. Lastly, he uses systems biology approaches to engineer fermentation microorganisms to produce value added products.

MARCIA MONACO SIEGEL (research assistant professor)

Dr. Monaco Siegel's research focuses on the development of nutritional strategies that will ultimately result in the optimization of infant health. The research involves the study of breast milk components and their impact on the development of the gastrointestinal tract and immune system.

What we do & Why it matters

Food Science and Human Nutrition

MANABU NAKAMURA (associate professor)

Dr. Nakamura leads the Individualized Diet Improvement Program (IDIP) for Sustainable Weight Loss research project. The objectives of the project are to develop a cost-effective dietary weight loss program, empower consumers by helping them make informed food choices, and train competent nutritionists/dietitians to administer the program.

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.

GRACIELA PADUA (research professor)

Dr. Padua advances the understanding of nano-scale protein organization and its applications in food, agricultural, and biomedical fields. She uses ultra-small angle x-ray scattering to investigate the structure of protein self-assemblies and soft gels. She has developed nanoencapsulation systems to increase nutrient bioavailability and to retain the taste of fresh fruits.

YUAN-XIANG PAN (associate professor)

Dr. Pan investigates how molecular mechanisms of epigenetic regulation control physiological functions and chronic disease processes. He identifies novel epigenomic mechanisms that will lead to individualized nutritional interventions for specific health outcomes to enhance the well-being of humans.

M. YANINA PEPINO (assistant professor)

Dr. Pepino advances the understanding of the effects of taste perception on ingestive behavior and nutrient metabolism. She investigates bariatric surgery-induced weight loss on flavor perception, eating and drinking, and the effects of consuming low calorie sweeteners on taste preference and blood sugar balance.

MELISSA PFLUGH PRESCOTT (assistant professor)

Dr. Prescott investigates strategies to maximize healthy food behaviors while minimizing the negative impact of the food system on the environment. Her research helps school nutrition programs and families reduce costs through food waste mitigation and promotes healthy habit development among children through food systems education and behavioral economic interventions.

SHELLY J. SCHMIDT (professor)

As a researcher, Dr. Schmidt employs a wide array of techniques and strategies to characterize the physical and chemical properties of food materials to help the food industry, as well as consumers, produce safe, nutritious, and high-quality food products. As a teacher, Dr. Schmidt is devoted to helping students 1) develop and mature as scientists and 2) become life-long learners and global citizens who make a difference.

MATT STASIEWICZ (assistant professor)

Dr. Stasiewicz applies new tools in genomics and data science to food safety microbiology. He develops methods to identify when bacterial pathogens persist in food-associated environments and to clean corn that has been contaminated with toxins produced by fungi. His work takes global strides toward building risk-based food safety systems.

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.

YI-CHENG WANG (assistant professor)

Dr. Wang develops novel engineering technologies to improve food quality and safety. He designs nanotechnology-enabled biosensors for rapid detection of foodborne pathogens, toxins, and other contaminants. He also works on active and intelligent packaging that can improve food products' shelf lives and safety.