Faculty Research Areas

Food Science & Human Nutrition
260 Bevier Hall
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Research and Investigators in the Department of Food Science and Human Nutrition

The Department of Food Science and Human Nutrition (FSHN) at the University of Illinois at Urbana-Champaign is dedicated to implementing education, research, and outreach programs designed to promote a safe, nutritious, accessible, and affordable food supply that enhances human health. To this end, students and faculty work collectively toward learning, discovering, and disseminating new knowledge and in applying novel technologies to achieve the departmental mission.

Research in FSHN is centered on four thematic areas: 1) Integrated Food, Nutrition, and Health; 2) Food Materials Science and Engineering; 3) Biochemical and Molecular Nutrition; and 4) Food Safety and Security. Specific research covers a range of topics from post-harvest processing of raw materials to applying nutritional therapy in clinical settings, synergized by a unique combination of food science, human nutrition and hospitality management expertise within a single department. Faculty areas of interest include the application of engineering and materials science to food design and systems optimization; ‘cell to society’ approaches to food and nutrition for health promotion and disease prevention; analytics and big data tools for understanding food structure, function, and human health; international food security and safety; and integrated food, nutrition, and health for creating novel foods and exploring dietary patterns.

Highlighted in this brochure are FSHN faculty, their research interests, and individual contact information. We invite you to engage with our faculty who are conducting preeminent scholarship in our critical areas. We anticipate many discoveries that will result in high quality, nutritious and pleasing foods, improved human health and wellness, and advances in science.

Sincerely,

Sharon M. Nickols-Richardson
Head, Department of Food Science and Human Nutrition
Juan E. Andrade  
*Assistant Professor, jandrade@illinois.edu*

International Food Science and Nutrition: Applied technologies and strategies to reduce micronutrient malnutrition, food fortification, micronutrient deficiency diagnostics, service and experiential learning, study abroad programs.

Anna E. Arthur  
*Assistant Professor, aarthur@illinois.edu*

Nutrition & Cancer Epidemiology and Survivorship: The influence of dietary patterns and energy balance on cancer recurrence, survival, and quality of life; dietary modulation of biomarkers of cancer progression and prognosis.

Hans Blaschek  
*Professor Emeritus; blaschek@illinois.edu*

Food and Biomass Microbiology: Genetic and physiological manipulation of clostridia; plant cell wall deconstruction; fermentation.

Keith Cadwallader  
*Professor; cadwlldr@illinois.edu*

Flavor Chemistry: Chemistry and analysis of food flavor; development and application of instrumental and sensory methods of analysis; flavor development; physical chemistry of flavor systems.

Karen Chapman-Novakofski  
*Professor; kmc@illinois.edu*

Community Nutrition: Nutrition education intervention and evaluation; osteoporosis and diabetes; internet and apps.
Hong Chen

*Associate Professor; hongchen@illinois.edu*

Nutrigenomics and Epigenetics: Nutrient regulation of epigenetic modifications during human development and carcinogenesis.

Elvira de Mejía

*Professor; edemejia@illinois.edu*

Bioactive peptides and proteins in foods with health benefits focusing on reduction of inflammation, markers of type-2 diabetes, cancer and cardiovascular risk; functional properties of food components especially flavonoids in ethnic teas, herbs and berries.

Sharon Donovan

*Professor and Director of Illinois Transdisciplinary Obesity Prevention Program (I-TOPP); sdonovan@illinois.edu*


Nicki Engeseth

*Professor; engeseth@illinois.edu*

Food Chemistry: Impact of environmental growing conditions, processing and storage on oilseed and fruit and vegetable quality and nutritional value, with emphasis on enzymatic action, lipids and natural antioxidants.

John Erdman, Jr.

*Professor Emeritus; jwerdman@illinois.edu*

Bioactive Food Components and Carotenoids: Dietary and non-dietary factors affecting absorption, utilization, and bioavailability of carotenoids; carotenoids and prostate cancer; soy and health; lutein and brain function.
Hao Feng
Professor; hao.feng@illinois.edu

Food Engineering and Processing: Novel food processing and preservation technologies, acoustic energy (ultrasound) and its use in food and bioprocess processing, food safety intervention technologies for fresh and fresh-cut produce, new dehydration (drying) technologies, heat and mass transfer analysis.

William Helferich
Professor; w.helferich@illinois.edu

Nutritional Toxicology: Food safety and toxicology; effect of natural chemicals present in foods on chronic diseases such as breast cancer.

Hannah Holscher
Assistant Professor; h.holscher@illinois.edu

Nutrition and the microbiome: dietary manipulation of the microbiome for disease prevention and treatment; clinical nutrition; host-microbe interactions; big data and bioinformatics.

Elizabeth Jeffery
Professor Emerita; e.jeffery@illinois.edu

Nutritional Toxicology and Functional Foods: Anticarcinogenic and anti-inflammatory effects of non-nutritive dietary components, including isothiocyanates and indoles from broccoli. Please note Dr. Jeffery is not currently accepting new students.

Yong-Su Jin
Associate Professor; y.jin@illinois.edu

Microbial Genomics: Microbial bioconversion of biomass into value-added products, microbial genomics for linking genotypes and beneficial phenotypes.
Soo-Yeun Lee
Professor; soolee@illinois.edu

Food Chemistry and Sensory Evaluation: Utilization of novel sensory approaches to solve technological issues in food science and health-related issues in nutritional sciences.

Youngsoo Lee
Assistant Professor; leeks@illinois.edu

Food processing, food structure, sodium reduction strategies, and microencapsulation: food structure-sodium release relationship, microencapsulation system development, microencapsulation of bioactive compounds, rheology and texture of food, spray drying, and extrusion.

Zeynep Madak-Erdogan
Assistant Professor; zmadake@illinois.edu

Nutrition, genomics, transcriptomics, cistromics, epigenetics, metabolomics, biomarker discovery, biosensors, molecular and physiological effects of phytochemicals present in food and natural and synthetic estrogens to resiliency to chronic diseases like metabolic syndrome and breast cancer, post-menopausal women’s health.

Michael Miller
Associate Professor; miller216@illinois.edu

Food Microbiology: Functional genomics of lactic acid bacteria (LAB); food and industrial fermentations; gastrointestinal microbiology; food microbiology and safety.

Scott A. Morris
Associate Professor; smorris@illinois.edu

Packaging and Food Engineering: Materials, defect imaging and detection; production and packaging systems design, modeling and optimization; food security, data-driven analysis, supply chain visualization for food, pharma and CPG; provenance and counterfeiting detection.
Manabu Nakamura  
*Associate Professor; mtnakamu@illinois.edu*

Biochemical and Molecular Nutrition: Function and metabolism of essential fatty acids in reproduction, inflammation and chronic diseases; transcriptional regulation of macronutrient metabolism; dietary weight loss and prevention of obesity.

Shelly Nickols-Richardson  
*Professor and Department Head; nickrich@illinois.edu*

Determinants of obesity prevention and body weight regulation across the life span to lower the burden of chronic diseases, ranging from metabolic syndrome to osteoporosis. Impact of weight loss, weight loss diets and restrained eating on body composition and biomarkers of health.

Graciela Padua  
*Research Professor; gwpadua@illinois.edu*

Food Materials Science; Biopolymers; Protein self-assembly; Zein properties and utilization; characterization and properties of nano- and microscale protein self-assembled structures and their applications in food, agricultural, and biomedical fields.

Yuan-Xiang Pan  
*Associate Professor; yxpan@illinois.edu*

Nutrigenomics and Epigenetics: Discoveries of novel molecular mechanisms of epigenomic or epigenetic regulation controlling physiological function and chronic disease processes.

Yanina Pepino  
*Assistant Professor; ypepino@illinois.edu*

Individual differences in taste perception: Food pleasure and reward pathways in lean versus obese individuals; perception of fat in foods; impact of surgical weight loss on taste perception and eating behavior; effect of non-caloric sweeteners on taste preference and glucose homeostasis.
Shelly Schmidt
Professor; sjs@illinois.edu

Food Materials Science and Food Chemistry: Characterization of water and solids mobility, typically using water activity, isotherms, glass transition temperature and NMR, in food materials and their relationship to the physical, chemical, and microbial stability and quality of food systems.

Marcia Monaco Siegel
Research Assistant Professor; monaco@illinois.edu

Maternal and Infant nutrition: the role of nutrition on maternal health and its impact in the infant. The influence of breast milk and its components in the functional development of the gastrointestinal tract, immune response and establishment of the microbiota. In addition, the development of nutritional strategies that optimize neonatal growth.

Matthew J. Stasiewicz
Assistant Professor; mstasie@illinois.edu

Food safety microbiology: persistence of bacterial foodborne pathogens; food safety risk assessment and management; applied genomics; international food safety, particularly mycotoxin control in cereals.

Pawan Takhar
Associate Professor; ptakhar@illinois.edu

Porous media modeling of fluid and species transport in biomaterials; biopolymer thermomechanics; transport processes such as frying, drying and sorption; biopolymer expansion during extrusion; modeling at the nanoscale; continuum thermodynamics based fluid-biopolymer interactions; predicting quality changes in foods during processing.

Kelly Tappenden
Professor; tappende@illinois.edu

Nutrition and intestinal function; intestinal failure; malnutrition assessment and intervention.