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

Food Chemistry, Structure and Function

BeMiller, J.N., Food Science Professor Emeritus, Ph.D., Purdue University (1959)

Chandrasekaran, R., Food Science Professor Emeritus, Ph.D., University of Madras, India (1966)
Molecular architecture of biopolymers; structure-function relationships in proteins, carbohydrates and nucleic acids; implementation of modern techniques to X-ray diffraction.

Hamaker, B.R., Food Science Professor, Ph.D., Purdue University (1986)
Carbohydrates and health - manipulation of starch and other glycemic carbohydrates for slowly digestible/low glycemic response or resistant character, and collaborative studies to understand human enzyme digestion and physiological response; dietary fiber and colon health - modifications in fiber functionality and fermentability, and collaborative studies on colon health; cereal starch and protein structure-function relationships; cereal chemistry and processing.

Jones, O.G., Food Science Assistant Professor, Ph.D., University of Massachusetts (2009)
Investigation of food protein and polysaccharide interactions for the production of utile delivery or textural systems. Our goal is to intuitively design structure and functionality of the end systems based on chemical and physical properties of the raw constituents. Facility is tested through the use of techniques such as photonic scattering, electrophoretic mobility, and sub-micron imaging.

Liceaga, A., Food Science Associate Professor, Ph.D., University of British Columbia, Canada (2006)
Protein chemistry. Major interest is structure-function relationships and interactions of food proteins and peptides, cryopreservation and shelf-life extension of fresh and frozen fish and fish products. Fish processing and formulation of value-added products from under-utilized fish. Protein hydrolysates and bioactive peptides. Protein interactions using vibrational (Raman) spectroscopy. Sensory Evaluation of food.

Mauer, L.J., Food Science Professor, Ph.D., University of Minnesota (1999)
Nielsen, S.S., Food Science Professor, Ph.D., University of Minnesota (1982)
Food proteins; digestibility of legume proteins; enzyme inhibitors in legumes; plasmin enzymes system in milk, and its effects on dairy product quality.

Reuhs, B.L., Food Science Associate Professor, Ph.D., University of Georgia (1994)
Research areas include food systems analyses (Pectin and Fiber) via the extraction and purification of acidic polysaccharides from the cell walls and middle lamella of plants. Bacterial capsule, gum, and lipopolysaccharide purification and analysis for plant-microbe interaction and food safety studies. The application of HPLC, GC-MS, and NMR in structural studies of carbohydrates and polysaccharides in food processing/food chemistry and the role of polysaccharides in bacteria-legume symbiosis and vegetable-human pathogen interactions.

Santerre, C.R., F & N Professor, Ph.D., Michigan State University (1989)
Analytical measurement (incl. analytical and immunological methods) of organic and inorganic contaminants to support risk assessment/communication efforts: influence of food processing upon food contaminants; pesticide toxicology; and food safety education.

Yao, Y., Food Science Associate Professor, Ph.D., Southern Yangtze University (2000)
Goal: To create cutting-edge methodologies & technologies through the rational design of carbohydrates and other biomaterials, targeting both fundamental advancement and the practical feasibility at industrial levels. Research Directions: (1) Food Nanotechnology: carbohydrate nanoparticle-based platform for the protection and controlled delivery of bioactive compounds, such as antimicrobial compounds, omega-3 fatty acids, and polyphenols; (2) Food Safety and Quality: practical and economical methodologies to protect staple foods, such as meat and fruit & vegetables from microbial contamination and quality deterioration; (3) Carbohydrate Analysis; (4) Novel Delivery Systems beyond Food: for the personal care, pharmaceutical, and agricultural areas.

Foods for Health

Kim, K.-H., Food Science Assistant Professor, Ph.D., Rutgers University (1999)
Bioactive food components that affect the fat cell biology such as cell differentiation, inflammatory response and metabolism; Understanding the role of a selenium binding protein in endoplasmic reticulum stress signaling pathway and its associated protein degradation in adipose tissue.

Matte, R.D., Nutrition Science Professor, Ph.D., Cornell University (1981); Registered Dietitian
Regulation of food intake in humans; energy and macronutrient balance; hunger, satiety, and cravings, chemical senses (i.e. taste and smell) and nutrition. The overall aim is to better understand the independent and interactive influences of neural, genetic, metabolic, hormonal, cognitive, cultural and especially sensory factors on human ingestive behavior and nutrient utilization in healthy and clinical populations. Our approach involves naturalistic feeding studies to metabolic assessments with individuals spanning the life cycle.
Running, C., Nutrition Science & Food Science Professor, Ph.D., Purdue University, 2015
Sensation of taste, smell, and chemesthesis (irritancy, chemical heating and cooling) in foods for health, salivary interactions with foods and diet patterns, and interactions of bioactive ingredients, oral sensation, and bioavailability

Food Safety and Microbiology

Applegate, B.M., Food Science Associate Professor, Ph.D., University of Tennessee (1997)
Detection of viable foodborne pathogens using bacteriophage; automated extraction of nucleic acids from various matrices; enumeration of microorganisms (i.e. pathogens and other organisms) using quantitative PCR; the use of bioreporters in bioelectronics; metabolic engineering; detection of problematic microorganisms in industrial environments; construction of recombinant bacterial strains to rapidly evaluate antimicrobial products; microbial ecology.

Bhunia, A.K., Food Science Professor, Ph.D., University of Wyoming (1989)
Detection and identification of foodborne bacterial pathogens by biosensor, immunological, cell culture (cytotoxicity assay) and molecular biology-based techniques; monoclonal and polyclonal antibodies against bacterial proteins and toxins; molecular mechanism of interaction of enteric pathogens with gastrointestinal cells and prevention strategies.

Deering, A.J., Food Science Clinical Assistant Professor, Ph.D., Purdue University (2010)
Internalization of human pathogenic bacteria in plants; routes of contamination that result in plants/fruits with pathogenic bacteria; interactions between human pathogenic bacteria and plants; development of novel sanitizers for the reduction of bacteria on fresh produce.

Irudayaraj, J., ABE Professor, Ph.D., Purdue University (1991)
Bionanotechnology and tracking single molecule interactions in live cells. Nanomaterials probe development for detecting food pathogens and cancer. Has extensive expertise in surface enhanced Raman spectroscopy and single molecule fluorescence spectroscopy for live cell analysis. Specifically we are interested in quantifying cell surface and monitoring DNA-protein interactions. Primary emphasis is on detecting pathogenic bacteria and cancer.

Lindemann, S.R., Food Science Assistant Professor, Ph.D., University of Iowa (2010)
Dietary strategies to manipulate gut microbiome structure and function, microbiome metabolic interactions, impacts of the gut microbiome on chronic inflammation and resistance to colonization by enteropathogens, microbial community dynamics and emergent properties.

Oliver, H. F., Food Science Associate Professor, Ph.D. Cornell University (2009)
Development of RNA-sequencing technologies to investigate stress survival and virulence mechanisms in foodborne pathogens; prevalence, persistence, and transmission dynamics of foodborne pathogen in retail food environments.
Pruitt, R. E., Botany and Plant Pathology Professor, Ph.D. California Institute of Technology (1986)
Understanding foodborne illness associated with fresh produce. Interactions between human pathogenic bacteria and plants. Metagenomics of microbial communities associated with plants. Use of next generation sequencing technologies to enumerate microbes in foods. Use of DNA sequencing to improve accuracy of microbial diagnostics.

Food Processing and Technology Development

Butzke, C.E., Food Science Associate Professor, Ph.D., Technische Universität Berlin, Germany (1992)
Biological and chemical parameters affecting wine and brandy production and quality: fermentation techniques and yeast nutrition, off-odor prevention, aging reactions, cork taint and bottle closures, distillation.

Campanella, O.H., ABE Professor, Ph.D., University of Massachusetts (1987)
Food rheology, role of rheology in food processing. Food extrusion. Transport phenomena in food processing.

Corvalan, C.M., Food Science Associate Professor, Ph.D., Unive. of Litoral, Argentina (1993)
Food and Biological Engineering. Coordinate experimental, theoretical and computational analysis of biomaterials, equipments and processes in the food industry. Physicochemistry and thermodynamics of biomaterials and kinetics of bioprocess. Rheology of biopolymers, micro-rheology, and rheology of interfaces.

Farkas, B.E., Department Head, Food Science Professor, Ph.D., University of California, Davis (1994)
Research in the areas of heat, mass, and momentum transfer as applied to food processing and preservation. Mathematical modeling and process simulation are used to develop a better understanding of transport processes and process optimization. Research activities focus on two areas: 1) Thermal processing of foods and 2) Mathematical modeling of moving boundary/phase change problems. Over the past three years the focus has been on high temperature interfacial science with attention to frying, spray drying and atomization.

Huang, J.-Y., Food Science Assistant Professor, Ph.D., University of Cambridge, U.K. (2013)
Sustainability of food processing, primarily focuses on: i) Fundamental studies in understanding mechanisms of deposit formation and removal, with particular emphasis on deposit characterization, measurements and modeling, aiming to find potential mitigation methods toward reduced fouling in food processing, and ii) Techno-economic-environmental analysis of the impacts of fouling and cleaning on energy use and greenhouse gas emissions of food production, aiming to develop optimal management of clean-in-place process to minimize water consumption and reduce environmental impact.

Kokini, J.L., Food Science Professor, Ph.D., Carnegie Mellon University (1977)
Rheological properties of foods; food nanotechnology; structure, texture, flavor relationships; developing bioactive nutraceuticals.
Ladisch, M.R., ABE & BME Professor, Ph.D., Purdue University (1977)
Bioseparations (process-scale liquid chromatography, absorption, and fundamentals of multicomponent separations). Bio-nanotechnology (protein biochips, proteins at surfaces, biomimetics). Bioprocessing of renewable resources and biological materials to value-added products.

Mishra, D.K., Food Science Assistant Professor, Ph.D., Michigan State University (2013)
Manufacturing, multiphase particulate modeling and validation, commercializing technologies, retort, aseptic and novel thermal processing, mathematical modeling, inverse problems and statistical analysis. Processing authority for acid/acidified and low-acid foods in both still and continuous flow systems.

Narsimhan, G., ABE Professor, Ph.D., Indian Institute of Technology, India (1979)
Physical properties, functional properties of proteins; formation, stability, and rheology of food emulsions and foams, absorption of proteins at air-water and oil-water interfaces, separation of proteins in downstream bioprocessing - precipitation of proteins, foam fractionation of proteins, transport processes in particulate systems.

Nelson, D.C., RHIT Associate Professor, Ph.D., Purdue University (1997)
Design and operating characteristics of food service equipment and their effects on food quality; optimization of utility and facility utilization in food service; productivity and ergonomic issues associated with food service operations.

Nelson, P.E., Food Science Professor Emeritus, Ph.D., Purdue University (1967)
Unit operations and packaging of aseptically processed products; effect of processing and packaging on product components; essence recovery studies; tomato products composition.

Okos, M.R., ABE Professor, Ph.D., Ohio State University (1975)
Fundamental and design aspects of biochemical and food process engineering. Fundamental mechanism for moisture migration as related to quality changes during the processing of food and biological materials, simulation and design of food processes, methodology to improve design and operation of food processes to minimize energy use and waste production of ethanol and flavor compounds from immobilized microbial and plant cell reactors.

San Martin-Gonzalez, F., Food Science Assistant Professor, Ph.D., Washington State University (2002)
Continuous microwave processing of fruit and vegetables purees. Nano and microencapsulation of bioactive compounds and natural antimicrobials based on high pressure homogenization.

Tao, B.Y., ABE Professor, Ph.D., Iowa State University (1988)

Weaver, C., Nutrition Science Professor, Florida State University (1978)
Chemical form and bioavailability of minerals; calcium metabolism.
Xu, Qin, Food Science Research Assistant Professor, Ph.D., Purdue University (1996)
Biomass conversion and utilization of agriculture materials. Development of novel methods to produce bio-fuel from grains and feedstock (such as corn and cornstalk). Study biopolymer (such as cellulose) structural/functional relationships, their process to create value-added products).