

# Research And Graduate Education

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## Food Safety and Security is a Hot Topic

*Fifth in a Series on the Presidential Initiatives*

The Institute for Food Safety and Security (IFSS) was formed to bring together the research, education and outreach components of food safety/security at ISU into one umbrella institute. This structure provides opportunities for collaboration and efficient teamwork, bringing together various units across campus that have been isolated from each other. The Institute coordinates and integrates their activities towards high priority state and national issues.

Seven units cover the spectrum of food problems and issues from farm to table, as follows:

The **Food-borne Infectious Disease Unit** is led by Drs. Mark Ackermann and Don Reynolds in the College of Veterinary Medicine. The goal of this unit is to eliminate human pathogens from animals and their products. An important objective is to develop rapid diagnostic assays and methods for the detection of pathogens. This unit also identifies and characterizes mechanisms of disease progression and the virulence factors of microorganisms that are associated with food contamination.

The **Food and Water – Harvest Unit** is led by Drs. Walter Hyde, Ramesh Kanwar, Patricia Murphy and Gary Osweiler. This unit is dedicated to improving sophisticated methods of detection and elimination of toxins from food and water. Directions of study include decreasing current food and water residues/pollutants from crop and livestock production systems; evaluating risk from products currently not well-characterized; and utilizing animals and wildlife as in situ monitors of water contamination. The unit deals with difficult samples such as animal

tissues, decomposing tissues, plant materials, grains and grasses and mixed feedstuffs.

Drs. Jim Dickson and Joe Sebranek head the **Food and Water – Post-Harvest Unit**. Its objective is to prevent, or reduce to acceptable levels, contamination which occurs during the post-harvest processes in the conversion of plant and animal products into food for human consumption. The Post-Harvest Unit works closely with other units, especially the Food-borne Infectious Disease and the Food and Water-Harvest units, as many of the hazards associated with food are introduced during the pre-harvest and harvest environments. In addition, the post-harvest unit has the responsibility of conducting research in the areas of packaging and distribution of foods.

Dr. Jeannie Sneed is professor-in-charge of the **Foodservice and Retail Unit**. Its mission is to coordinate teaching, research and extension/outreach to meet the needs of students, consumers and the food service industry to ensure the safe preparation and service of food. Hotel, Restaurant and Institution Management (HRIM) has an active cooperative extension program that provides educational programming related to food safety for school, hospital and college food service workers. HRIM extension also established the ISU Food Safety web site and the Food Safety Consortium web site.

Professors-in-charge Drs. Helen Jensen, Robert Lowry, Alan Marcus, Lulu Rodriguez and Stephen Sapp coordinate research, teaching, and outreach efforts in the unit **Food Systems, Communications, and Consumer Economics and Public Policy Unit**. Most food-borne illnesses occur due to

*continued on page 2*

## Institute for Food Safety and Security Has Many Facets

*continued from page 1*

human errors and gaps in the public health system. Improved food safety communication is critical in facilitating science-based food safety policies. Understanding the history of food safety programs and political pressures and incentives faced by public officials who implement them facilitates informed innovations in food safety public policy and technology.

The **Food-borne Disease Models and Risk Analysis Unit** is headed by professors-in-charge Drs. Scott Hurd and Jim McKean. Food safety protection and farm-to-retail tracking has become increasingly important as domestic and international trade issues. Components of the unit include: evaluation of trace-ability techniques for implementation from farm-to-retail; food-borne pathogens quantification and characterization which assist in development of predictive factors and control activities within the food chain.

The **International Food Security Unit** consists of the Biosafety Initiative for Genetically Modified Agricultural Products (BIGMAP) led by Dr. Manjit Misra and the Center for Food Security and Public Health (CFSPH) led by Dr. James Roth. Both of these centers address international food security in unique ways. BIGMAP provides science-based analysis of the risks and benefits of genetically modified organisms. CFSPH provides increased education and awareness of threats to the food supply and public health and enhances preparedness for outbreaks of zoonotic and animal diseases. Both centers focus heavily on education and outreach.

Faculty members overlap in several of the centers and come from all areas of the College of Veterinary Medicine; Animal Science; Food Science and Human Nutrition; Economics; Electrical and Computer Engineering; Ames Lab; Ag & Biosystems Engineering; Greenlee School of Journalism and Communication; Sociology; Political Science; Chemistry; Mechanical Engineering; Hotel, Restaurant and Institution Management; History; and Extension.

IFSS affiliated faculty members have more than \$43 million in current extramural funding. Newly funded research includes \$500,000 from the USDA/CREES to Helen Jensen, lead PI, Jim Dickson and Catherine Woteki and various collaborating institutions for *Prioritizing Opportunities to Reduce Food-borne Disease*. Another proposal by the University of California at Davis includes IFSS collaboration in a proposal to the Department of Homeland Security for Post-Harvest Food Protection and Defense (up to \$5M annually for three years). Dr. Jim Dickson is the PI for the ISU portion.