
Comparative genomic and genetic analysis of Salmonella sequences for SNP discovery and rapid subtyping

Date Started: 2010

Length (years): 3

Objective: The project investigates DNA sequence-based genetic structures of several of the most common Salmonella strains associated with human illness. These data will facilitate the design of specific diagnostic tests for effective detection, identification, and differentiation of foodborne outbreak strains of Salmonella. The full-length genomic data harvested from this project will allow for the identification of effective nucleic-acid based targets for uniquely and unambiguously identifying a specific strain or serovar of Salmonella. This project will reveal a detailed nucleotide-sequence based survey on the complete genomic structure of a significant number of Salmonella pathogens associated with produce-borne outbreaks of salmonellosis.

Researchers: Marc Allard, Eric Brown, Jianghong Meng

Topics: Microbial Hazards

Publications:

Publication: Zheng, J., C. Keys, S. Zhao, R. Ahmed, J. Meng, and E. W. Brown. 2011. Simultaneous Analysis of Multiple Enzymes Sharply Increases the Accuracy of PFGE in Assigning Genetic Relationships among Homogeneous Salmonella Strains. *J. Clin. Microbiol.* 49:85-94.

Type: Publication

Publication: Lienau, E. K., E. Strain, C. Wang, J. Zheng, A. R. Ottesen, C. E. Keys, T. S. Hammack, S. M. Musser, E. W. Brown, M. W. Allard, G. Cao, J. Meng, And R. Stones. 2011. Identification Of A Salmonellosis Outbreak By Means Of Molecular Sequencing. *N Engl J Med.* 364:981-2.

Type: Publication

The impact of food recall information on retail response to food recalls: The social-psychology of pulling and restocking product

Date Started: 2010

Length (years): 2

Objective: When a widespread foodborne illness outbreak results in a food recall, the product can be out of the marketplace for an extended period of time; this occurred when fresh, bagged spinach was recalled in 2006. Tomatoes were also less available following the Salmonella Saintpaul outbreak in 2008. Although growers and retailers want to provide safe foods, decisions surrounding production, wholesale, and retail sales forecasting in response to a food recall affects how quickly the food is again available for consumption. This study will help the FDA better understand the reasons for the time between a food recall resulting from a foodborne illness outbreak and market recovery.

Researchers: Xiaoli Nan, Linda Verrill

Topics: Risk Communication

Publications: N/A

Development and Validation of Nanosensors for Detecting and Subtyping Foodborne Pathogens

Date Started: 2009

Length (years): 2

Objective: To develop and validate low cost, rapid, sensitive, versatile, and portable biosensors using nanotechnology for detection and molecular subtyping of food borne microbial pathogens. (2) To develop carbon nanotube transistor arrays to electronically detect the binding of microbial DNA to specific DNA probes. (3) To optimize procedures of microbial enrichment and DNA release for the nanobiosensor.

Researchers: Eric Brown, FDA, Romel D. Gomez, UMD, Thomas Hammack, FDA, Wenxia Song, UMD

Topics: Pathogen Detection/Characterization

Publications:

Publication: Subramanian, S., K. Aschenbach, J. P. Evangelista, M. B. Najjar, W. Song, R. D. Gomez*. 2012. Rapid, sensitive and label-free detection of Shiga-toxin producing Escherichia coli 0157 using carbon nanotube biosensors. *Biosensors & Bioelectronics.* 32:69-75.

Type: Publication

Development of a Risk Assessment Framework for Folate Metabolism and the Identification of Applicable Risk Assessment Models

Date Started: 2009

Length (years): 2

Objective: To develop a risk assessment framework for folate. (2) To explore the data availability and gaps in the construction of risk and benefit curves. (3) To identify an appropriate risk assessment model based on available data that would take into account inadequate and excess folate intake.

Researchers: WenYen Juan, FDA, Nadine Sahyoun, UMD

Topics: Risk Assessments/Analysis

Publications: N/A

Development and Validation of In Vitro Hepatotoxicity Assay(s) for Dietary Supplemental Materials

Date Started: 2009

Length (years): 2

Objective: To develop in vitro assay(s) for examining potential hepatotoxicity of supplemental ingredients and other botanical materials; to validate the in vitro assay(s) using in vivo animal study.

Researchers: Thomas J. Flynn, UMD Liangli (Lucy) Yu, UMD

Topics: Applied Nutrition

Publications:

Publication: Xie, Z., Zhao, Y., Chen, P., Jing, P., Yue, J., Yu, L. 2011. Chromatographic fingerprint analysis, and rutin and quercetin compositions in the leaf and whole-plant samples of diploid and tetraploid *Gynostemma pentaphyllum*. *Journal of Agricultural and Food Chemistry*. 59: 3042-3049

Type: Publication

Publication: Huang, H., Cheng, Z., Shi, H., Xin, W., Wang, T.Y., Yu, L. 2011. Isolation and characterization of two flavonoids, engeletin and astilbin, from the leaves of *Engelhardia roxburghiana*, and their potential anti-inflammatory properties. *Journal of Agricultural and Food Chemistry*. 59: 4562-4569

Type: Publication

Publication: Liu, Y., Flynn T.J., Ferguson, M., Hoagland, E.M., Yu, L. 2011. Effects of dietary phenolics and botanical extracts on hepatotoxicity-related endpoints in human and rat hepatoma cells and statistical models for prediction of hepatotoxicity. *Food and Chemical Toxicology*. 49: 1820-1827.

Type: Publication

Developing Phyllosphere Metrics in Good Agricultural Practices (GAPs) to Reduce the Risks of Salmonellosis in Fresh-Market Tomatoes and Other Vegetable Crops.

Date Started: 2009

Length (years): 1

Objective: To learn more about the effects of agricultural practices on epiphytic populations in the phyllosphere of vegetable crops, and whether surrogate organisms can be identified that are associated with high risk practices, such as using surface water for routine pesticide applications, especially as harvest approaches.

Researchers: Eric Brown, Michael Newell, Andrea Ottesen, Mihai Pop, Christopher S. Walsh, James R. Wright

Topics: Risk Assessments/Analysis

Publications:

Publication: Talias, A, White JR, Pahl DM, Ottesen AR, Walsh CS. 2011. Bacterial community diversity and variation in spray water sources and the tomato fruit surface. *BMC Microbiol*. 2011 Apr 21;11:81

Type: Publication

Characterization of Shiga toxin-producing Escherichia coli (STEC) and other Pathogenic E. coli

Date Started: 2009

Length (years): 3

Objective: Shiga toxin-producing Escherichia coli (STEC) have been implicated in foodborne illnesses causing diarrhea and hemolytic uremic syndrome (HUS) worldwide. E. coli O157:H7 is the major enterohemorrhagic E. coli (EHEC) linked to HUS in the United States, however non-O157 STEC strains have caused several outbreaks and have been isolated in similar frequency. DNA based techniques are frequently used during foodborne disease outbreaks to determine if a pathogen isolated from patients, suspected food and/or environmental sources belong to the same strain. Molecular subtyping techniques for determining the differences among STEC strains are usually time consuming, labor intensive and some of them lack significant discrimination power. Most agencies use PFGE DNA fingerprinting as the accepted method for foodborne pathogen tracking. The goal was to establish and pinpoint a potential reservoir of infestation for STEC using several molecular subtyping methodologies. These include several state of the art molecular epidemiological tools such as PFGE, SNPs analysis (e.g. Bioplex/Luminex), and whole genomes canning for strain variation. These data should facilitate a more detailed source tracking of feral STEC strains isolated from numerous distinct ecological niches in conjunction with foodborne outbreaks. The information gained from understanding the evolutionary relatedness of these foodborne pathogens is key to unraveling the molecular epidemiological pathways that lead to food contamination by dangerous STEC. Other pathogenic E. coli will also be characterized for their antimicrobial resistance and virulence potential.

Researchers: Marc Allard, Eric Brown, Jianghong Meng, Patrick McDermott, Lydia Rump, Shaohua Zhao

Topics: Pathogen Detection/Characterization

Publications:

Publication: Xia, X, J. Meng, P.F. McDermott, S. Ayers, K. Blickenstaff, T. Tran, J. Abbott, J. Zheng, and S. Zhao. 2010. Presence and Characterization of Shiga Toxin-Producing Escherichia coli and Other Potentially Diarrheagenic Escherichia coli in Retail Meats. Appl. Environ. Microbil. 76: 1709-1717.

Type: Publication

Publication: Xia, X., J. Meng, S. Zhao, S. Bodeis-Jones, S. A. Gaines, S. L. Ayers, And P. F. Mcdermott. 2011. Identification And Antimicrobial Resistance Of Extraintestinal Pathogenic Escherichia Coli From Retail Meats. J Food Prot. 74:38-44.

Type: Publication

Publication: Xia, X., P. F. McDermott, S. Zhao and J. Meng. 2011. Escherichia coli from retail meats carry genes associate with uropathogenic E. coli, but are weakly invasive in human bladder cell culture. J. Appl. Microbiol. 110: 1166-1176.

Type:

Publication: Rump, L.V., S. Bodies-Jones, J. Abbott, S. Zhao, J. Kase, S. Lorenz, M. Fischer, E. Brown, and J. Meng. 2012. Genetic characterization of Escherichia coli O104 isolates from different sources in the United States. Appl. Environ. Microbil. 78: 1709-1717.

Type: Publication

Be Food Safe

Date Started: 2009

Length (years): 2

Objective: Foodborne illness often presents itself as flu-like symptoms such as nausea, vomiting, diarrhea, or fever, thus, people may not recognize the illness is caused by bacteria or other pathogens in food. Most cases of foodborne illness can be prevented by behaviors such as proper cooking or processing of food. The USDA's Be Food Safe campaign was developed to educate and motivate target audiences to engage in safe food handling. "Be food safe" means preventing foodborne illness through four easy steps: Cleaning, Separating, Cooking and Chilling. The Be Food Safe partner campaign, developed by USDA using the Fight BAC! ® messages and endorsed by the Partnership for Food Safety Education, is a communication program that delivers specific safe food handling messages to help consumers understand the simple steps that can be taken to prevent foodborne illness. Using an easy-to-remember theme directed to caregivers of children or older adults, the Be Food Safe campaign is intended to empower consumers with the knowledge to achieve and maintain safe food handling behaviors.

Researchers: Monique Turner, Linda Verrill

Topics: N/A
Publications: N/A

Evaluating Public Health Impacts and Cost-Effectiveness of Implementing Good Agricultural Practices (GAPs) in the Tomato Farm Environment

Date Started: 2008

Length (years): 2

Objective: To understand the impacts of GAPs implementation on either reducing or eliminating on-farm Salmonella spp. and Enterococcus spp. contamination of water, soil, plants and tomatoes. (2) To determine the costs to tomato growers of implementing GAPs. (3) To evaluate the degree to which the costs of GAPs presents a significant barrier to implementation and reduction of bacterial contamination.

Researchers: Marc Boyer, Andrew Estrin, Sam W. Joseph, Christina McLaughlin, Amy R. Sapkota

Topics: Risk Assessments/Analysis

Publications:

Publication: Micallef, S.A. , R. E. Rosenberg Goldstein, A.h George, L. Kleinfelter, M. S. Boyer, Cr. R. McLaughlin, A. Estrin, L. Ewing, J. J. Beaubrun, D. E. Hanes, M. H. Kothary, B. D. Tall, J. H. Razeq, S. W. Joseph, A. R. Sapkota. 2012. Occurrence and antibiotic resistance of multiple Salmonella serotypes recovered from water, sediment and soil on mid-Atlantic tomato farms. Environmental Research. 114:31-39.

Type: Publication

Plant Responses to the Colonization for Escherichia coli O157:H7 and Salmonella

Date Started: 2008

Length (years): 1

Objective: To develop experimental procedures to analyze the M. truncatula enteric bacteria interaction and test the effect of environmental and physiological factors (2) To analyze M. truncatula gene expression in response to E. coli O157:H7 and Salmonella

Researchers: Jean-Michel Ane, Eric Brown, Charles W. Kaspar

Topics: Microbial Hazards

Publications:

Publication: Dhileepkumar Jayaraman, Jeri D. Barak, Eric W. Brown, Charles W. Kaspar and Jean-Michel Ané. 2011. Medicago truncatula as a model for studying the genetic basis of plant interactions with E. coli O157:H7 and Salmonella. Annual meeting of American Society of Plant Biologists (ASPB), Minneapolis, MN.

Type: Presentation

Transport of Self-Assembled Nanostructures through Skin

Date Started: 2006

Length (years): 2

Objective: To study the ability of nanoscale particles to transport encapsulated ingredients into skin. Such nanoscale structures are beginning to be used in cosmetic and topical consumer products, and the results from these studies could have potential safety implications in the use of these products. Nanoscale structures of particular interest are vesicles and liposomes. These will be synthesized to incorporate markers of skin penetration, either fluorescent molecules or radiolabelled chemicals. The nanostructures will be applied to excised human and animal (either pig or rat) skin and penetration into the skin will be determined using in vitro diffusion cell techniques developed at FDA.

Researchers: Robert Bronaugh, Olawatosi Oguniola, Srinivasa R. Raghavan

Topics: Risk Assessments/Analysis

Publications: N/A

Development of a Real-time PCR Assay for the Detection and Identification of Shigella spp. from Foods

Date Started: 2006

Length (years): 2

Objective: (1) Exclusion of a false positive strain, *Escherichia vulneris*, from a chormogeinc agar plate for specific detection of *Enterobacter sakazkaii* by supplementing with glucose. (2) Quantitative recovery of *Enterobacter sakazkaii* by using updated one-step enrichment with spin-down method from dried infant formula; (3) Direct applicability of Taqman detection chemistry designed for ABI Prism 7000 SDS to the Cepheid SmartCycler® II platform; (4) Re-Evaluation of a combined culture and Real-Time PCR method for detection of presumptive pathogenic *Enterobacter sakazkaii* in milk products; (5) Effect of lactic acid bacteria on *Enterobacter sakazkaii* during short- and long-term storage of dried infant formula; (6) Use of various post-lethality treatments to reduce *Enterobacter sakazkaii* on Ready-to-Eat baby food and dried infant formula; (7) Comparison of detection limit for detecting *Enterobacter sakazkaii* using by Real-Time PCR, Pathatrix, selective media and conventional culture method. (8) Risk assessment of *Enterobacter sakazkaii*; (9) Update BAM method to detect *Enterobacter sakazkaii*

Researchers: Keith Lampel, Kwang-Young Song

Topics: Pathogen Detection/Characterization

Publications:

Publication: Song, K.Y., Seo, K., Lee, S., and Brackett, R. (2006). "Comparison of Ct Value on 10 Different Pre-enrichment Broths to Detect *Enterobacter sakazkaii* in Powdered Infant Formula Using by Real-Time PCR - Preliminary Study." Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Comparison of FDA Method and Real-Time PCR for the Detection of *Enterobacter Sakazakii* in Powdered Infant Formula - Preliminary Study." Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Evaluation of Efficacy of Quaternary Ammonium Compounds as Disinfectant to Inactive *E.sazakazakii*." Preliminary Study, Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Inactivation of *Enterobacter sakazakii* Vegetative Cell to Sodium Hypochlorite and Comparison of Biofilm Formation on Various Different Conveyor Belt Chips." Poster Presentation - FDA Science Forum Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Inactivation and Removal of *Bacillus anthracis* Spores by Commercial Disinfectants." Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Multi-detection System for *E. coli* O157:H7 and *Salmonella* Enteritidis Using Quantum Dots as Nontechnology." Preliminary Study, Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Quantum Dots as a Novel Immunofluorescent Detection System for *E. coli* O157:H7 and *Salmonella* Enteritidis." Preliminary Study. Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S., and Brackett, R. (2006). "Removal and Inactivation of *Bacillus Anthracis* Spores Using by Various Commercial Disinfectants." Poster Presentation - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Resistance of *E.sazakazakii* Vegetable Cell to Chlorine and Comparison of Biofilm Formation on Two Different Conveyor Belts." Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Predicting Exposure Estimates: Experimental Food Additive Partitioning Studies and Model Development

Date Started: 2004

Length (years): 3

Objective: To develop accurate methods for predicting the extent of packaged food contamination, allowing officials to quickly evaluate personal food exposure estimates to chemical agents and/or radioactive contamination from the food supply and implement the necessary safety measures.

Researchers: Timothy Begley, William Limm, Robert A. Walker

Topics: Risk Assessments/Analysis

Publications:

Publication: Walker, R.A. (2006) "Migration and Two-Dimensional Phase Behavior of Common Polymer Antioxidant Additives." Mid-Atlantic Regional Meeting (MARM) of the American Chemical Society, Hershey, PA. Project Ref. U.029

Type: Presentation

Publication: Walker, R.A. (2005) "Predicting Exposure Estimates: Experimental Food Additive Partitioning Studies and Model Development." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.029

Type: Presentation

Publication: Walker, R.A. (2005) "Properties and 2-Dimensional Organization of Common Polymer Antioxidant Additives." 230th National Meeting of the American Chemical Society, Washington, DC. Project Ref. U.029

Type: Presentation

Publication: Walker, R.A. (2005) "Surface Activity of Common Antioxidant Additives in Polymers." Bioscience Day, University of Maryland, College Park, MD. Project Ref. U.029

Type: Presentation

Publication: Heiserman, W.M., Can, S.Z., Walker, R.A., Begley, T.H., Limm, W. (2007). "Interfacial Behavior of Common Food Contact Polymer Additives." *Journal of Colloid and Interface Science*, 311: 587-594.

Type: Publication

Enzymatic Degradation of Prion Surrogate Proteins

Date Started: 2004

Length (years): 3

Objective: To compare Sup35NM and Sup35NM-His6 and select the better candidate for development of a standard Prion Surrogate Protein (PSP). The PSP will be mixed with normal nervous tissue in a pilot-scale pressure cooker and serve as a marker for prion degradability to enzymatic action under industrial rendering conditions. Brain and spinal cord tissues will be added to mimic the specified risk materials (SRM) for BSE. To improve the specificity and activity of the keratinase, several genetically modified keratinases will be produced and tested for efficacy against the PSP. If proven effective, modified keratinase enzyme species that specifically attack BSE prion may ultimately be developed.

Researchers: Gerald B. Havenstein, Jason C.H. Shih, Jeng-Jie Wang

Topics: Microbial Hazards

Publications:

Publication: Wang, J.J., Borwornpinyo, R. and Shih, J.C.H. (2007). "Sup35NM-His6 Aggregates: A Prion-Like Protein Useful in Prion Degradation Studies." *Enz. Microb. Technol.* 40(1): 976-81 Project Ref. C.019

Type: Publication

Publication: Chen, C.Y., Rojanatavorn, K., Clark, C. and Shih, J.C.H. (2005). "Characterization and Enzymatic Degradation of Sup35NM, a Yeast Prion-Like Protein." *Protein Sci.* 14 (9): 2228-2235. Project Ref. C.019

Type: Publication

Publication: Wang, J.J., Borwornpinyo, R., Odetallah, N. and Shih J.C.H. (2005). "Enzymatic Degradation of a Prion-Like Protein, Sup35NM-His6." *Enz. Microb. Technol.* 36 (5):758-765. Project Ref. C.019

Type: Publication

Analysis of sera from previous Norwalk-like virus human exposure study, Mark Sobsey, Department of Environmental Sciences and Engineering, University of North Carolina. (Project extended until 4/07)

Date Started: 2004

Length (years): 3

Objective: (1) Identify and acquire human infectivity dose-response data from HAV and NV from studies done primarily in the USA from the published literature and other available data sources, such as reports and experimental records; (2) Acquire as many of the HAV and NV inocula as possible that were used in these human volunteer dose response studies. Better quantify the virus titers of as many of the acquired inocula as possible using RT-PCR and possibly other analytical methods; (3) Quantify dose-response relationships of HAV and NV using various estimates of virus titers in the inocula and the health effects responses of human volunteers (infection, illness and if available, mortality). Develop quantitative dose-response relationships using various dose-response models appropriate for human pathogens; (4) Search the published literature, other published reports and other legitimate data sources for the measured concentrations of HAV and NVs in foods, including foods consumed in outbreaks of NV gastroenteritis and of Hepatitis A (infectious hepatitis); (5) Use the dose-response relationships from human volunteer studies with NV and HAV and the data on NV and HAV levels in food to estimate these risks of NV gastroenteritis and infectious hepatitis (Hepatitis A) from ingestion of these foods. Compare the predicted risks of illness of NV gastroenteritis and Hepatitis A obtained by these analyses to the actual risks of NV gastroenteritis and infectious hepatitis observed in food borne and waterborne disease outbreaks. This provides a basis to compare the risks predicted from the quantitative microbial risk assessment analyses to the actual risks observed in outbreaks.

Researchers: Mark D. Sobsey

Topics: Risk Assessments/Analysis

Publications: N/A

Development of Molecularly Imprinted Polymers for the Selective Detection of Marine Biotoxins

Date Started: 2004

Length (years): 2

Objective: To develop molecularly imprinted polymers (synthetic polymer receptors) against the marine biotoxins domoic acid and microcystin-LR. The two water soluble toxins are hazardous substances that are common contaminants in human drinking water and food supplies. The molecules possess chemical structures that present a challenge for developing robust, sensitive and selective materials for their detection. There are two facets of the proposed research. The first consists of the development of optimum conditions for synthesizing molecularly imprinted polymers (MIPs) against the two marine biotoxins, domoic acid and microcystin-LR. We draw upon expertise from our own laboratory and from the molecular imprinting literature to identify the most promising porogins, functional and cross-linking monomers for the MIP formulations. Small combinatorial arrays of functional monomers, cross linkers, will be prepared and evaluated semi quantitatively to identify the best candidates. Larger scale synthesis will provide material for evaluation of affinity and selectively for domoic acid and Microcystin-LR. Analysis will include data from binding isotherms and where available, comparison with commercially available ELISA diagnostic kits. The second phase of this work will involve modifications of the imprinted receptor sites to incorporate a transducer for reporting the binding event. We will draw from our recent imprinting studies of functional, polymerizable monomers containing a florescent group. By analogy, binding of the biotoxins domoic acid and microcystin-LR would produce a detectable change in the fluorescence emission of the MIP. This approach will allow direct verification of the presence of the biotoxins in the field with a minimum requirement for peripheral instrumentation.

Researchers: Kenneth J. Shea

Topics: Microbial Hazards

Publications: N/A

Analyses of Data Collected in Epidemiologic and Microbiologic Field Studies of Domestic and Imported Produce

Date Started: 2004

Length (years): 1

Objective: To investigate the potential sources of microbial contamination of produce in 10 farms and 13 packing sheds in the southern US. This includes produce from groups that are minimally processed and eaten raw (leaf lettuce/spinach, parsley/cilantro/basil, green onions, cabbage, melons/cantaloupe).

Researchers: Juan Leon, Christine Moe

Topics: Pathogen Detection/Characterization

Publications:

Publication: Johnston, L.M., Moe, C.L., Moll, D. and Jaykus, L. (2006). "The Epidemiology of Produce-Associated Outbreaks for Foodborne Disease." In: J.L. James (ed.), *Microbial Hazard Identification of Fresh Fruit and Vegetables*. John Wiley and Sons, Inc., Hoboken, NJ. Page 37-72. Project Ref. C.016
Type: Publication

Publication: Johnston, L.M., Jaykus, L., Moll, D., Martinez, M., Anciso, J., Mora, B. and Moe, C.L. (2005). "A Field Study of the Microbiological Quality of Fresh Produce." *J. Food Prot.*, 68 (9): 1840-1847. Project Ref. C.016
Type: Publication

Rapid Assay for Detecting Human Enteric Viruses and Viral Survival Dynamics on Fresh Fruits and Vegetables

Date Started: 2004

Length (years): 4

Objective: To develop a more accurate indicator of the fecal viral risk associated with fresh fruits and vegetables. The aim of this project is to develop and evaluate a range of rapid assays based on virus-specific RNA to detect enteric viruses in both water supplies for irrigation and on the surface of vegetables. The assays will subsequently be utilized to study the prevalence of enteric viruses and die off of the viruses once they contaminate the surface of vegetables. The project will involve: (a) development of methods for detecting enteric viruses on fresh produce; (b) evaluation of fresh produce safety using *E. coli*, enterococci, and virus testing; (c) survival dynamics of the enteric viruses on fresh produce; and (d) screening and characterization of enteric viruses on retail fresh produce

Researchers: Jianghong Meng, Robert Premier

Topics: Pathogen Detection/Characterization

Publications:

Publication: Williams, K., and Meng, J. (2005). "RT-PCR for the Detecting Norovirus." *Annu. Meet. Intl. Asso. Food Prot.*, Baltimore, MD. Project Ref. C.007
Type: Presentation

Conflicting information about Safety Guidelines for Consumption of Fish

Date Started: 2004

Length (years): 1

Objective: To analyze National daily newspapers in order to explore how the media has framed the issue of safe fish consumption.

Researchers: Linda Aldoory

Topics: Risk Communication

Publications: N/A

Development of a Specific Monoclonal Antibody for *Enterobacter sakazakii*: Identification and an Immunoassay Using Color-Coded Bio-Nanotubes

Date Started: 2004

Length (years): 2

Objective: (1) To identify specific antigen of E. Sakazakii; (2) To develop a specific monoclonal antibody for E. Sakazaki; (3) To develop an immuno assay system using the monoclonal antibody and innovative fluorescence bio-nanotubes. (4) Simple and User-Friendly Slide Assay; (5) Automated and Rapid Assay; (6) To evaluate the immuno assay system for rapid, specific detection of Enterobacter sakazakii in infant formula and environmental samples

Researchers: Kun-Ho Seo, Kwang-Young Song

Topics: Pathogen Detection/Characterization

Publications:

Publication: Thammasuvimol, G., Seo, K.H., Song, K.Y., Holt, P.S. and Brackett, R. (2005). "Optimization of Ferrioxamine E Concentration as Effective Supplementation for Selective Isolation of Salmonella Enteritidis in Egg White." (accepted for publication November 2005, published in the Journal of Food Protection, 69 (3): 634-80 . Project Refs. P. 009 & P.010

Type: Publication

Publication: Song, K.Y., Seo, K., Lee, S., and Brackett, R. (2006). "Comparison of Ct Value on 10 Different Pre-enrichment Broths to Detect Enterobacter sakazakii in Powdered Infant Formula Using by Real-Time PCR - Preliminary Study." Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Comparison of FDA Method and Real-Time PCR for the Detection of Enterobacter Sakazakii in Powdered Infant Formula - Preliminary Study." Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Evaluation of Efficacy of Quaternary Ammonium Compounds as Disinfectant to Inactive E.sakazakii." Preliminary Study, Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Inactivation of Enterobacter sakazakii Vegetative Cell to Sodium Hypochlorite and Comparison of Biofilm Formation on Various Different Conveyor Belt Chips." Poster Presentation - FDA Science Forum Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Inactivation and Removal of Bacillus anthracis Spores by Commercial Disinfectants." Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Multi-detection System for E. coli O157:H7 and Salmonella Enteritidis Using Quantum Dots as Nontechnology." Preliminary Study, Abstract Published - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Quantum Dots as a Novel Immunofluorescent Detection System for E. coli O157:H7 and Salmonella Enteritidis." Preliminary Study. Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S., and Brackett, R. (2006). "Removal and Inactivation of Bacillus Anthracis Spores Using by Various Commercial Disinfectants." Poster Presentation - FDA Science Forum. Project Ref. P.009 & P.010

Type: Presentation

Publication: Song, K.Y., Seo, K., Lee, S. and Brackett, R. (2006). "Resistance of E.sakazakii Vegetable Cell to Chlorine and Comparison of Biofilm Formation on Two Different Conveyor Belts." Poster Presentation - IAFP Meeting. Project Ref. P.009 & P.010

Type: Presentation

Aquaculture Drugs: LC/MS Protocols for Marker Determination

Date Started: 2004

Length (years): 2

Objective: (1) Characterize the absorption, tissue distribution, metabolism, and elimination of unapproved aquaculture drugs in cultured catfish and shrimp; (2) Identify a marker residue (e.g. parent drug or metabolic product) of drug exposure to catfish and shrimp; (3) Develop protocols for the determination of the marker residues in catfish and shrimp using liquid chromatography - mass spectrometry; and (4) Validate or peer verify the performance of the LC/MS method for acceptability in residue monitoring and surveillance programs

Researchers: Ann Abraham, Robert W. Dickey

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Molecular Phylogenetic Identification of Foodborne Bacterial Strains

Date Started: 2004

Length (years): 2

Objective: The project maintains three experimental objectives. Each contributes to the rapid differentiation and identification of foodborne bacterial strains: (1) Cladistic analysis of DNA sequence diversity for the identification of foodborne microbial strains; (2) Identification of specific strains using single-nucleotide signatures; (3) Design and application of PCR-based markers for the differentiation of *E. coli*, *Salmonella*, and *Shigella*

Researchers: Eric W. Brown, Alice Hayford

Topics: Pathogen Detection/Characterization

Publications: N/A

The Impact of Risk Messages about Bioterrorism on the U.S. Food Supply on Audience Attitudes and Behaviors

Date Started: 2003

Length (years): 3

Objective: To test different food bioterrorism scenarios, played out through simulated news stories over a period of days, to evaluate the effects of selected message characteristics on public responses.

Researchers: Linda Aldoory, Marjorie Davidson, Brenda Derby, Laura Fox, Alan Levy

Topics: Risk Communication

Publications:

Publication: Aldoory, L., Davidson, M., Derby, B. and Levy, A. (2004/2005). "The Impact of Risk Messages about Bioterrorism on the U.S. Food Supply on Audience Attitudes and Behaviors." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.028

Type: Presentation

An Integrated Approach for Identifying Phototoxic Cosmetic Ingredients

Date Started: 2003

Length (years): 3

Objective: Development of non-animal assays or biomarkers that predict the risks associated with the use of cosmetic ingredients on sun-exposed skin.

Researchers: Daniel E. Falvey, Patty K.L. Fu, Wayne G. Wamer

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Falvey, D.E. (2004/2005). "An Integrated Approach for Identifying Phototoxic Cosmetic Ingredients." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.027

Type: Presentation

Publication: Wamer, W., Vath, P., Falvey, D. (2003). "Photophysics and Photocytotoxicity of Retinyl Acetate." 31st Annual Meeting of the American Society for Photobiology, Baltimore, MD.

Type: Publication

Publication: Wamer, W., Fu, P.P., Falvey, D.E. (2005). "Photocytotoxicity of Retinol and the Role of Photooxidative Damage." 230th ACS National Meeting, Washington, D.C.

Type: Publication

Molecular Mechanisms of Fluoroquinolones and Erythromycin Resistance in *Campylobacter jejuni/coli*

Date Started: 2003

Length (years): 3

Objective: To determine the role of point mutations in *gyrA* gene in fluoroquinolones and erythromycin resistance; (2) To identify putative efflux pumps associated with fluoroquinolones and erythromycin resistance; and (3) To identify novel determinants responsible for resistance to fluoroquinolone and erythromycin

Researchers: Patrick F. McDermott, Jianghong Meng, David G. White

Topics: Microbial Hazards

Publications:

Publication: Ge, B., McDermott, P.F., White, D.G. and Meng, J. (2005). "Role of efflux pumps and topoisomerase mutations in fluoroquinolone resistance in *Campylobacter jejuni* and *Campylobacter coli*." *Antimicrob Agents Chemother.*, 49 (8): 3347-3354. Project Ref. U.026

Type: Publication

Publication: Chen, S., Zhao, S., McDermott, P.F., White, D.G., Cui, S. and Meng, J. (2004). "The Roles of Target Mutation and Efflux in Fluoroquinolone Resistant *Salmonella*." *Annu. Meet. Am. Soc. Microbiol.*, New Orleans, LA. Project Ref. U.026

Type: Presentation

Publication: Meng, J., Ge, B., McDermott, P., White, D. and Zhao, S. (2004). "The Role of Efflux Pumps in Antimicrobial Resistance in *Campylobacter jejuni/coli*." *The 5th World Congress Foodborne Infections & Intoxications*, Berlin, Germany. Project Ref. U.026

Type: Presentation

Publication: Meng, J., McDermott, P.F., & White, D.G. (2004/2005) "Molecular Mechanisms on Fluoroquinolone and Erythromycin Resistance in *Campylobacter jejuni/coli*." *JIFSAN Research Grant Symposium*, College Park, MD. Project Ref. U.026

Type: Presentation

***Campylobacter jejuni*-host Interaction of the Intestinal Mucosal Surface**

Date Started: 2003

Length (years): 3

Objective: To compare the abilities of different isolates of *C. jejuni* to adhere to, invade into, and migrate across the polarized intestinal epithelial monolayer; (2) To determine the effect of *C. jejuni* on the organization of the cytoskeleton and tight junction of polarized intestinal epithelial cells; (3) To determine the effect of *C. jejuni* on the expression levels of the chemokine and the homing receptor for leukocytes in polarized intestinal epithelial cells.

Researchers: Ruby Singh, Wenxia Song, Shaohua Zhao

Topics: Microbial Hazards

Publications:

Publication: Zheng, J., Meng, J., Zhao, S., Singh, R. and Song, W. (2006). "Adherence to and Invasion of Human Intestinal Epithelial Cells by *Campylobacter jejuni* and *Campylobacter coli* Isolates from Retail Meat Products." *J. Food Prot.* 69 (4): 768-774. Project Ref. U.025 & U.002

Type: Publication

Publication: Sheela, R.R., Babu, B., Mu, J., Subbiah, E., Bautista, D.A., Raybourne, R.B., Heckert, R.A. and Song, W. (2003). "Immune Responses Against *Salmonella* Enterica Serovar Enteritidis Infection in Virally Immunosuppressed Chickens." *Clinical and Diagnostic Laboratory Immunology.* 10(4): 670-9. Project Ref. U.025 & U.002

Type: Publication

Publication: Zheng, J., Meng, J. and Song, W. (2007). "Campylobacter-induced Polarized Secretion of IL-8 in Human Intestinal Epithelial Cells Requires Campylobacter-secreted CDT and TLR-Induced Activation of NF-kB." Intl Asso. Food Prot., Orlando, FL. Project Ref. U.025 & U.002

Type: Presentation

Publication: Zheng, J., Meng, J. and Song, W. (2006). "IL-8 secretion of Human Intestinal Epithelial Cells Induced by Campylobacter jejuni/coli." ASM Annual Meeting, Orlando, FL. Project Ref. U.025 & U.002

Type: Presentation

Publication: Zheng, J., Meng, J. and Song, W. (2005). "Campylobacter Induces a Polarized Secretion of IL-8 Human Intestinal Epithelial Cells." Microbial Pathogenesis and Host Response. Cold Spring Harbor Laboratory, New York, NY. Project Ref. U.025 & U.002

Type: Presentation

Publication: Song, W. (2004). "Campylobacter jejuni-host Interaction on the Intestinal Mucosal Surface." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.025 & U.002

Type: Presentation

The Kinetics of Acrylamide Inhibition/Destruction/Scavenging under Various Reaction/ Process Conditions

Date Started: 2003

Length (years): 1

Objective: Not available Note: found in 03-04 annual report (page 12).

Researchers: Bryan Hanley

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

IFIC Consumer Attitude Research on Acrylamide

Date Started: 2003

Length (years): 1

Objective: To explore the extent to which the issue of "acrylamide in food" has permeated the consciousness of the consumer, and the extent to which it has impacted dietary choices or concerns. In addition, this qualitative research will attempt to identify potential triggers to behavioral change and acceptable messages that explain and provide context to risk information provided to the consumer.

Researchers: Dave Schmidt

Topics: Risk Communication

Publications: N/A

Rapid Determination of Food Integrity and Identification of Food borne Bacteria using Fourier Transform Near Infrared (FT-NIR) Spectroscopy and Pattern Recognition Techniques

Date Started: 2003

Length (years): 2

Objective: To optimize, improve, and make more generally available some of the methodology involving FT-NIR that has been previously developed: (1) Optimize/improve current FT-NIR methodologies on bacterial identification and further validate the models developed. (2) Optimize/improve current FT-NIR methodologies on quantification of added biological or chemical substances through the use of surrogate materials, if necessary. (3) Investigate the portability of the methodology to other laboratories/instruments and the chemometric models by transfer of calibration. (4) Investigate the comparison of the results from FT vs. dispersive instrumentation. (5) Investigate the applicability of FT-NIR for detection of other contaminants or adulterants to food or food products as determined by Center needs.

Researchers: Janie DuBois, Fred S. Fry, Jr.

Topics: Pathogen Detection/Characterization

Publications: N/A

Facilitating Needed Drug Approvals for Aquaculture: In Vitro Metabolic Profiles to Characterize and Predict Drug Residues in Finfish

Date Started: 2002

Length (years): 3

Objective: To facilitate needed drug approvals for the expansion of therapeutic drugs used in aquaculture in the United States.

Researchers: Andrew S. Kane, Renate Reimschuessel, Badar Shaikh

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Kane, A, Shaikh, B. and Reimschuessel, R. (2004/2005). "Facilitating Needed Drug Approvals for Aquaculture in vitro Metabolic Profiles to Characterize and Predict Drug Residues in Finfish." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.024

Type: Presentation

Publication: Gonz ález, J.F., Reimschuessel, R., Shaikh, B. and Kane, A.S. (2002). "In vitro Metabolic Profiles to Characterize and Predict Drug Residues in Aquacultured Finfish." (Abstract) Presented at the Fourth International Symposium on Aquatic Animal Health, New Orleans, LA. Project Ref. U.024

Type: Presentation

Publication: Gonzalez, J.F., Shaikh , B., Reimschuessel, R., Kane, A.S. (2008). "In vitro kinetics of hepatic albendazole sulfoxidation in channel catfish (*Ictalurus punctatus*), tilapia (*Oreochromis sp.*), rainbow trout (*Oncorhynchus mykiss*) and induction of EROD activity in ABZ-dosed channel catfish." *Veterinary Pharmacology and Therapeutics*, 32: 429-435.

Type: Publication

Publication: Gonzalez, J.F., Reimschuessel, R., Shaikh , B., Kane, A.S. (2009). "Kinetics of hepatic phase I and II biotransformation reactions in eight finfish species." *Marine Environmental Research*, 67: 183-188.

Type: Publication

Moving Whole-Cell Biosensing from a Qualitative to Quantitative Tool: Development of a Dynamic Cell Immobilization Mechanism

Date Started: 2002

Length (years): 3

Objective: Establishment of the cell immobilization mechanism, verification of sensing capacity and cell viability, and quantitative analysis of sensing signals.

Researchers: Mahendra H. Kothary, Y. Martin Lo

Topics: Pathogen Detection/Characterization

Publications:

Publication: Lo, Y.M., Vargas, A. and Blersch, D. (2007). "Portable Biodetector Integrating Bioluminescent Sensing Cells with Real-time Signal Acquisition and Processing." CIGR Section VI - 3rd International Symposium: Food and Agricultural Products: Processing and Innovations, Naples, Italy. Proceedings of CIGR Section VI - 3rd International Symposium: Food and Agricultural Products: Processing and Innovations, Naples, Italy. Project Ref. U.023

Type: Presentation

Publication: Wang, J., Hahm, T.S., Stoecker, D.K. and Lo, Y.M. (2005) "Quantitative Analysis of Bioluminescent Signals Emitted by lux-fused Biosensing Cells for the Detection of Harmful Algae." IFT Annual Meeting, New Orleans, LA. Project Ref. U.023

Type: Presentation

Publication: Lo, Y.M. (2004/2005). "Moving Whole-Cell Biosensing from a Qualitative to Quantitative Tool: Development of a Dynamic Cell Immobilization Mechanism." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.023

Type: Presentation

Publication: Wang, J. and Lo, Y.M. (2004) "Characterization of Stress-Responsive Bioluminescence Induced by Toxic Harmful Algae." ASABE/CSABE Annual Meeting, Ottawa, Canada. Project Ref. U.023
Type: Presentation

Publication: Wang, J. and Lo, Y.M. (2004) "Detection and Identification of Toxic Harmful Algae Using Bioluminescent Stress Fingerprinting." IFT Annual Meeting, Las Vegas, NV. Project Ref. U.023
Type: Presentation

Publication: Wang, J. and Lo, Y.M. (2003) "Enabling Whole-Cell Biosensing: Quantification of Stress-Responsive Bioluminescence from a Five-Gene luxCDABE Reporter System." IFT Annual Meeting, Chicago, IL. Project Ref. U.023
Type: Presentation

Publication: Lo, Y.M. (2002). "Moving Whole-Cell Biosensing from a Qualitative to Quantitative Tool." Institute of Biological Engineering Meeting, Baton Rouge, LA. Project Ref. U.023
Type: Presentation

Study of Nisin and Sublancin in a Strategy for Protection of the United States Food Supply from Pathogenic Bacterial Spores Introduced Through Bioterrorism

Date Started: 2002

Length (years): 3

Objective: Identify and study chemical agents that can kill bacterial spore pathogens, thus destroying their ability to synthesize toxins or cause infections.

Researchers: Laila H. Ali, Norman Hansen

Topics: Microbial Hazards

Publications:

Publication: Yuksel, S. and Hansen, J. N. (2007). "Transfer of Nisin Gene Cluster from Lactococcus Lactis ATCC 11454 into the Chromosome of Bacillus Subtilis 168." Applied Microbiology and Biotechnology, 74 (3): 640-649. Project Ref. U.022
Type: Publication

Publication: Hansen, N. (2004/2005). "Study of Nisin and Sublancin in a Strategy for Protection of the United States Food Supply from Pathogenic Bacterial Spores Introduced through Bioterrorism." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.022
Type: Presentation

Safety Inspection of Fresh-Cut Fruits and Vegetables Using Optical Sensing and Imaging Techniques

Date Started: 2002

Length (years): 3

Objective: To identify and characterize contaminations and defects on ready-to-eat fresh fruits and vegetables based on spectral sensing; (2) To determine the efficacy of using multispectral imaging techniques on identifying various fecal contaminations on fresh produces; (3) To test and validate multispectral imaging techniques to detect potentially problematic defects that could harbor pathogens, such as cuts or cracks in fruits and vegetables, in which washing water is hard to reach.

Researchers: Robert Buchanan, Yud-Ren Chen, Moon S. Kim, Yaguang Luo, Yoonseok Soon, Yang Tao

Topics: Pathogen Detection/Characterization

Publications:

Publication: Cheng, X., Tao, Y., Chen, Y.R. and Chen, X. (2006). "Integrated PCA-FLD Method for Hyperspectral Imagery Feature Extraction and Band Selection." In IEEE Proceedings on Medical Imaging: Macro to Nano, 2006(2):1384-1387. Project Ref. U.021
Type: Publication

Publication: Rui-Cruz, S., Gonzalez, R., Luo, Y., Tao, Y. and Gonz ález, G. (2006). "Effect of Acidified Sodium Chlorite Applications on Microbial Growth and the Quality of Shredded Carrots." J of Food Science, JSFA-05-0312. 86 (12): 1887-1893. Project Ref. U.021

Type: Publication

Publication: Kim, J.G., Luo, Y., Tao, Y., Saftner, R.A. and Gross, K.C. (2005). "Effect of Initial Oxygen Concentration and Film Oxygen Transmission Rate on the Quality of Fresh-Cut Romaine Lettuce." Journal of the Science of Food Agriculture. Vol. 85(10):1622-1630. Project Ref. U.021

Type: Publication

Publication: Vargas, A., Kim, M., Tao, Y., Lefcourt, A.M., Luo, Y. and Chen, Y.R. (2005). "Detection of Fecal Contamination on Cantaloupes Using Hyperspectral Fluorescence Imagery." Journal of Food Science. 70(8):471-476. Project Ref. U.021

Type: Publication

Publication: Cheng, X., Tao, Y., Chen, Y.R. and Luo, Y. (2003). "NIR/MIR Dual-Sensor Machine Vision System for Online Apple Stem-End/Calyx Recognition." Transactions of ASAE. Vol. 46(2):551-558. Project Ref. U.021

Type: Publication

Publication: Tao, Y., Cheng, X., Chen, Y.R. and Luo, Y. (2002) "NIR/MIR Dual-Sensor Vision System for Apple Defect and Stem-End/Calyx On-Line Recognition." Acta Horticulturae, 599: 343-349. Project Ref. U.021

Type: Publication

Publication: Tao, Y. (2006) "Quality Assurance Imaging." National Food Processor Association Annual Conference, Washington DC. Project Ref. U.021

Type: Presentation

Publication: Tao, Y. (2004) "Advanced Detection Technology for Food Processing Lines." National Food Processor Association (NFPA) Annual Conference, Washington DC. Project Ref. U.021

Type: Presentation

Publication: Tao, Y. (2004) "Bio-Imaging and Machine Vision." Zhejiang University, China. Project Ref. U.021

Type: Presentation

Publication: Tao, Y. (2004) "Imaging Modalities for Quality & Safety Inspections." CIGR International Annual Conference. Beijing, China. (2004) Project Ref. U.021

Type: Presentation

Publication: Tao, Y. (2004) "Machine Vision & Imaging for Automated Detection of Hazardous Materials." National Food Processor Association (NFPA) Annual Conference, Washington, DC. Project Ref. U.021

Type: Presentation

Publication: Tao, Y. (2004) "Machine Vision Intelligence, Process Automation, and Productivity. Invited lecture to Chinese Governmental Official Training Class." Invited by the Institute of Global Chinese Affairs of UMD. Project Ref. U.021

Type: Presentation

Publication: Tao, Y. and Lefcourt, A. (2004/2005) "Safety Inspection of Fresh-Cut Fruits and Vegetables Using Spectral Sensing and Imaging Techniques." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.021

Type: Presentation

Publication: Tao, Y., Vargas, A., Kim, M., Lefcourt, A.M., Chen, Y.M., Luo, Y., Buchanan, R.L. and Song, Y. (2004) "Safety Inspection of Fruit and Vegetables Using Optical Sensing and Imaging Techniques - Hyperspectral Fluorescence Imaging System for Food Safety." JIFSAN Annual Conference, College Park, MD. Project Ref. U.021

Type: Presentation

Publication: Vargas, A.M., Tao, Y., Kim, M., Lefcourt, A.M., Luo, Y. and Chen, Y.R. (2004) "Safety Inspection of Fruit and Vegetables Using Optical Sensing and Imaging Techniques." written for presentation at the 2004 ASAE Annual International Meeting Sponsored Ottawa, Ontario, Canada. Project Ref. U.021
Type: Presentation

Publication: Cheng. M. Y., Tao, Y., Chen, R. and Chan, D. (2003). "Hyperspectral Imaging and Feature Extraction Methods in Fruit and Vegetable Defect Inspection." ASAE International Annual Meeting, Las Vegas, NV. ASAE Paper No. 033119. The American Society of Agricultural Engineering, St. Joseph, MI. Project Ref. U.021
Type: Presentation

Publication: Tao, Y., Vargas, A.M., Kim, M., Lefcourt, A.M., Chen, Y.R., Luo, Y., Kelly, J., Chan, D., Buchanan, R.L., Song, Y. (2003) "Safety Inspection of Fruit and Vegetables Using Optical Sensing and Imaging Techniques." Annual Symposium of JIFSAN Food Safety Research, University of Maryland. Project Ref. U.021
Type: Presentation

Publication: Vargas, A.M., Tao, Y., Kim, M., Lefcourt, A.M., Chen, Y.R., Kelly, J. (2003) "Safety Inspection of Fruit and Vegetables Using Optical Sensing and Imaging Techniques." Poster at Bioscience Day, University of Maryland, College Park, MD. Project Ref. U.021
Type: Presentation

Publication: Tao, Y. (2002) "Machine Vision and Imaging for Inspection of Agricultural Materials." Zhejiang University, Hangzhou, China. Invited by Zhejiang University, China. Project Ref. U.021
Type: Presentation

Publication: Tao, Y. (2002) "Machine Vision and Productivity: Techniques and Collaborations in Fruit/Food Quality Sorting, X-ray Detection of Hazardous Materials in Foods, and Other High-speed Machine Vision On-line Inspections." Forum on Ag & Bio System Engineering Development Strategy, Yangling, China. Invited by the Minister of Agriculture of China and Chinese Society of Agricultural Engineers. Project Ref. U.021
Type: Presentation

Evaluation of the Potential Toxicity of Soybean Isoflavones in Development and Aging

Date Started: 2002

Length (years): 2

Objective: To investigate the transfer and accumulation of genistein or genistin administered orally to birds, with resulting accumulation into the eggs.

Researchers: Sherry Ferguson, Mary Ann Ottinger

Topics: Applied Nutrition

Publications:

Publication: Ottinger, M.A., Lavoie E., Thompson, N., Barton, A., Whitehouse, K., Barton, M., Abdelnabi, M., Quinn, M., Jr., Panzica, G., Viglietti-Panzica, C. (2007). "Neuroendocrine and behavioral effects of embryonic exposure to endocrine disrupting chemicals in birds." *Brain Research Reviews*. Epub Sep 19. 57(2): 376-385. Project Ref. U.020
Type: Publication

Publication: Ottinger, M.A., F. Lin, J.M. Wu, M. J. Quinn, Jr., M.A. Abdelnabi, E.T. Lavoie and M.M. Guisti (2006). "Isoflavones-enriched Eggs: Transfer of Isoflavones into Eggs and Health Benefits. In: *The Egg*." (Sim, J.S., ed). University of Guelph Press. pp 155-170. Project Ref. U.020
Type: Publication

Publication: Ottinger, M.A., M.J. Quinn, Jr., E. Lavoie, M.A. Abdelnabi, N. Thompson, J.L. Hazelton, J. Beavers and M. Jaber. (2005). "Consequences of Endocrine Disrupting Chemicals on Reproductive Endocrine Function in Birds: Establishing Reliable End Points of Exposure." *Domestic Animal Endocrinology*, 29(2): 411-419. Project Ref. U.020

Type: Publication

Publication: Lin, F., Wu, J., Abdelnabi, M.A., Ottinger, M.A. and Giusti, M.M. (2004). "Effects of Dose and Glycosylation on the Transfer of Genistein into the Eggs of Japanese Quail (*Coturnix japonica*)."
Journal of Agriculture and Food Chemistry 52: 2397-2403. Project Ref. U.020

Type: Publication

Publication: Lin, F., Giusti, M.M., Wu, J. and Ottinger, M.A. (2002). "Effects of Dose and Glycosylation on the Transfer of Genistein into the Eggs of the Japanese Quail (*Coturnix japonica*)."
Maryland Research magazine: Value-Added Eggs. Maryland Research. Spring 2002, 11 (2): 11. Project Ref. U.020

Type: Publication

Publication: Ottinger, M.A. (2007). "What Do EDC Effects in Birds Mean for Biomedicine?"
Conference on New Chemical Bodies: Biomonitoring, Body Burden, and the Uncertain Threat of Endocrine Disruptors, a Gordon Cain Conference sponsored by the Chemical Heritage Foundation, Philadelphia, PA. Project Ref. U.020

Type: Presentation

Publication: Ottinger, M.A. (2005). "The Japanese Quail Model: Neuroendocrine and Behavioral Responses to Environmental Contaminants."
Symposium on Reproductive Behavior and Environmental Pollutants, September 15-16, Centre for Reproductive Biology in Uppsala, Stockholm, Sweden. Project Ref. U.020

Type: Presentation

Publication: Ottinger, M.A. (2004). "The Actions of Endocrine Disrupting Chemicals in Poultry."
Invited Keynote Speaker, 5th International Congress on Food Animal Endocrinology, Budapest, Hungary. Project Ref. U.020

Type: Presentation

Publication: Ottinger, M.A. (2004). "Transfer of Soy Isoflavones into the Eggs of Japanese Quail (*coturnix japonica*)."
Invited Keynote Speaker, The 3rd International Symposium on Egg Nutrition for Health Promotion, Banff, Alberta, Canada. Project Ref. U.020

Type: Presentation

Publication: Ottinger, M. A., Lin, F., Wu, J.M., Quinn, M.J., Jr., Abdelnabi, M.A., Lavoie, E.T., and Giusti M.M. (2004) "Isoflavones-enriched eggs: Transfer of Isoflavones into Eggs and Health Benefits."
In The Amazing Egg: Nature's Perfect Functional Food for Health. The Post-Symposium Proceeding Book. The 3rd International Symposium on Egg Nutrition for Health. Banff, Alberta, Canada. Project Ref. U.020

Type: Presentation

Publication: Lin, F., Giusti, M.M., J. Wu, J. and M. A. Ottinger, M.A. (2003). "Effects of Dose and Glycosylation on the Transfer of Genistein into the Eggs of the Japanese Quail (*Coturnix japonica*)."
IFT annual Meeting, Anaheim, California. 2002. Biosciences Research & Technology Review Day, College Park, MD. 2002. IFT Maryland Section Supplier's Night, Timonium, MD. Project Ref. U.020

Type: Presentation

Influence of Pre-harvest Antibiotic Pesticide Treatment on the Native Microflora of Apple and Pear Blossoms, Leaves, Fruit and Cider, and Its Implications for Food Safety

Date Started: 2002

Length (years): 3

Objective: To test the hypothesis that the application of antibiotic pesticides alters the native bacterial microflora of pre-harvest orchid fruit, creating ecological niches for human enteric pathogens.

Researchers: S. Brian Eblen, Arthur J. Miller, Christopher Walsh

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Ottesen, A., Walsh, C. and Newell, M. (2006) "Health and Food Safety Implications of Organic vs. Conventional Management of Fruit Trees: Impacts on Phyllosphere Bacteria." Underutilized

Plants. Their Role in Preventive Medicine, Nutrition and Sustainability. (Abstract-Poster), Center for a Livable Future at Johns Hopkins University. Project Ref. U.019

Type: Presentation

Publication: Walsh, C. (2006). "Future Harvest Conference; Farming for Profit and Stewardship." Sustainable Orchard, Hagerstown, MD. Project Ref. U.019

Type: Presentation

Publication: Walsh, C. (2005) "A Progress Report from the Organic Orchard at WyeREC." Ag Agent In-Service Training and Crops Tour, Upper Marlboro, MD. Project Ref. U.019

Type: Presentation

Publication: Walsh, C. and Ottesen, A. (2004/2005) "Influence of Pre-Harvest Antibiotic Pesticide Treatment on the Microflora of Apple and Pear Blossoms, Leaves, Fruit, and Cider and its Implications for Food Safety." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.019

Type: Presentation

Effects of Consumer Food Preparation on Acrylamide Formation

Date Started: 2002

Length (years): 2

Objective: (1) Study the effects of cooking conditions (e.g. time/temperature) on acrylamide formation in a variety of consumer-prepared foods; (2) Determine the consumer acceptability of foods cooked under conditions that prevent or reduce acrylamide levels.

Researchers: Lauren Jackson, Charles Sizer

Topics: Risk Communication

Publications: N/A

Monitoring and Compliance under Seafood HACCP: An Economic Investigation

Date Started: 2001

Length (years): 3

Objective: To conduct an economic investigation of the determinants of seafood processing plant inspection and compliance with HACCP regulations, using data provided by FDA and other sources. The results of the analysis should help improve targeting of inspections and formulation of measures (e.g., injunctions or fines) to promote greater compliance.

Researchers: Anna Alberini, Dominic Mancini

Topics: Risk Communication

Publications:

Publication: Alberini, A., Lichtenberg, E., Mancini, D. and Galinato, G. (2005). "Was It Something I Ate? Implementation of the FDA Seafood HACCP Program." American Journal of Agricultural Economics (in press), 90 (1): 28-41. Project Ref. U.018

Type: Publication

Publication: Alberini, A. (2006). "Was It Something I Ate? Implementation of the FDA Seafood HACCP Program." 3rd World Congress of Environmental and Resource Economists, Kyoto. Project Ref. U.018

Type: Presentation

The Use of Tissue Fluid Correlations in Predict Drug Residue Levels in Edible Tissues

Date Started: 2001

Length (years): 3

Objective: To provide the initial validation for the use of tissue-fluid correlation data as a tool to be used by food safety personnel to accurately predict whether a particular animal has tissue drug residues, which are in violation of FDA approved tolerances.

Researchers: Jurgeon van Bredow, Pamela Chamberlain, Natalie D. Eddington, Keesla Moulton, James O. Peggins

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Khurana, M. and Eddington, N.D. (2004). "A Simple HPLC Assay for Determination of Gentamicin in Rat Urine and Its Application to Urinary Excretion Study." University of Maryland School of Pharmacy, Research Day Celebration, Baltimore, MD. Project Ref. U.017

Type: Presentation

Publication: Khurana, M. and Eddington, N.D. (2004). "A Simple and Sensitive HPLC Assay for Determination of Gentamicin Components C1, C2a and C2 in Rat Urine, Plasma and Tissues: Application to Urinary Excretion and Tissue Uptake Study." AAPS, Baltimore, MD. Project Ref. U.017

Type: Presentation

Publication: Khurana, M. and Eddington, N.D. (2004). "Physiological Based Pharmacokinetic Model for Gentamicin in Rats." AAPS, Baltimore, MD. Project Ref. U.017

Type: Presentation

Publication: Khurana, M., Moulton, K., Chiesa, O.A., von Bredow, J.D. and Eddington, N.D. (2003). "Pharmacokinetics of Gentamicin after Single and Multiple Doses in Holstein Steers." American Association of Pharmaceutical Sciences, Salt Lake City, UT. Project Ref. U.017

Type: Presentation

Publication: Moulton, K.E., Peggins, J.O., Chiesa, O.A., Chamberlain, P.L., von Bredow, J., Thomas, M.H., Eddington, N.D. and Khurana, M. (2003). "Antibiotic Gentamicin: A Long Depletion Time in Holstein Steers." 9th Annual FDA Sciences Forum, Washington Convention Center, Washington, DC. Project Ref. U.017

Type: Presentation

Publication: Moulton, K.E., Peggins, J.O., Chiesa, O.A., Chamberlain, P.L., von Bredow, J. Thomas, M.H., Eddington, N.D., and Khurana, M. (2002). "Relationship of Drug Levels in Biological Fluids to Tissue Concentrations in Bovine Steers 224." American Chemical Society National Meeting, Boston, MA. Project Ref. U.017

Type: Presentation

Investigating the Perceived Credibility of FDA's Advisory Committee Meetings as Techniques for Communicating about Food, Drug, Biologics, and Medical Device Issue

Date Started: 2001

Length (years): 4

Objective: To investigate the influence of conflict-of-interest considerations on the perceived credibility of FDA advisory committee.

Researchers: Linda Sherman, Linda Suydam, Leah Waks

Topics: Risk Communication

Publications:

Publication: McComas, K.A., Simone, L., Waks, L. and Sherman, L. (2007). "Predicting Satisfaction and Outcome Acceptance with Advisory Committee Meetings: The Role of Procedural Justice." *Journal of Applied Social Psychology*, 37 (5): 905-927. Project Ref. U.016

Type: Publication

Publication: McComas, K.A., Tuite, L., and Sherman, L. (2005). "Conflicted Scientists: The 'Shared Pool' Dilemma of Scientific Advisory Committees." *Public Understanding of Science*, 14 (3): 285-303. Project Ref. U.016

Type: Publication

Publication: McComas, K.A. and Simone, L. (2003). "Media Coverage of Conflicts of Interest in Science." *Science Communication*, 24 (4), 395-419. Project Ref. U.016

Type: Publication

Publication: McComas, K. and Tuite, L. (2004). "Conflicted Scientists: The "Shared Pool" Dilemma of Scientific Advisory Committees." Paper presented at the Association for Education in Journalism and Mass Communication Annual Convention, Toronto, ON. Project Ref. U.016

Type: Presentation

Publication: McComas, K., Waks, L., Simone, L., and Sherman, L. (2004). "Predicting Satisfaction and Outcome Acceptance with Decision-Making Processes: The Role of Procedural Justice." Paper presented at the International Communication Association Annual Meeting, New Orleans, LA. Project Ref. U.016

Type: Presentation

Publication: McComas, K. (2003). "Investigating the Perceived Credibility of FDA Advisory Committee Meetings." Invited presentation at the JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.016

Type: Presentation

Publication: Simone, L. and McComas, K.A. (2003) Perceptions of Media Coverage of Conflicts of Interest within the U.S. Food and Drug Administration's Advisory Committees." Paper presented at the Association for Education in Journalism and Mass Communication Annual Convention, Kansas City, MO. Project Ref. U.016

Type: Presentation

Publication: McComas, K.A. (2002). "Credibility, Conflict of Interest, and Satisfaction with Advisory Committees: Report on Research In-Progress." Invited presentation to the Center for Food Safety and Applied Nutrition Staff College at the U.S. Food and Drug Administration, College Park, MD. Project Ref. U.016

Type: Presentation

Publication: McComas, K.A. and Simone, L.S. (2002). "Conflict of Interest, Credibility, and Advisory Committee Meetings: A Pilot Study." Paper presented at the 2002 Society for Risk Analysis Annual Meeting, New Orleans, LA. Project Ref. U.016

Type: Presentation

Publication: McComas, K.A. and Simone, L. (2002). "Media Coverage of Conflicts of Interest in Science." Paper presented at the 2002 Association for Education in Journalism and Mass Communication Annual Convention, Miami, FL. (2002) Project Ref. U.016

Type: Presentation

Comparison of the Effects of Curcumin Supplements in Young and Aged Rats

Date Started: 2001

Length (years): 3

Objective: To compare the incidence of pathological changes in young and aged rats fed curcumin with rats fed the control diet, to determine the effect of aging on the absorption of metabolism of curcumin added to the diet and to elucidate a potential mechanism for the purported anti-aging effect of curcumin supplements.

Researchers: Hamida Alam, Sabine Franke, Fred Hines, Bernadene Magnuson

Topics: Applied Nutrition

Publications:

Publication: Daly, K., Tracy, A., Francke-Carroll, S., Wang, T., Malik, M. and Magnuson, B.A. (2007). "Enhanced Estrogenic Responses and Sensitivity to Azoxy methane Following Dietary Soy Isoflavone Supplementation in Older Female Rats." Food and Chemical Toxicology, 45(4):628-37. Project Ref. U.015

Type: Publication

Publication: Kwon, Y., Malik, M. and Magnuson, B.A. (2004). "Inhibition of Colonic Aberrant Crypt foci by Curcumin in Rats is Affected by Age." Nutrition and Cancer, 48(1):37-43. Project Ref. U.015

Type: Publication

Publication: Malik, M. and Magnuson, B.A. (2004). "Rapid Method for Identification of Chemopreventive Compounds Using Multiplex RT-PCR for Cyclooxygenase mRNA Expression." *Cancer Detection and Prevention*, 28(4): 277-282. Project Ref. U.015

Type: Publication

Publication: Ferri, M., Francke-Carroll, S., and Magnuson, B. (2005). "Development of Immunohistochemical Staining Techniques for PCNA and Apoptosis Tissue Markers on Rat tissues in the CFSAN Pathology Laboratory." *FDA Science Forum*, April, Washington, DC. Project Ref. U.015

Type: Presentation

Publication: Kwon, Y.J. and Magnuson, B.A. (2005). "Expression of Cyclooxygenase-1 is Inhibited by Azoxymethane and Restored by Dietary Curcumin in the Colon of Rats." *Frontiers in Cancer Prevention*, October, Baltimore, MD. Project Ref. U.015

Type: Presentation

Publication: Kwon, Y.J., Francke-Carroll, S. and Magnuson, B.A. (2005). "Effect of Age on Azoxymethane-Induced Colonic Apoptosis in Rats." *FDA Science Forum*, April, Washington, DC. Project Ref. U.015

Type: Presentation

Publication: Tracy, A., Francke-Carroll, S. and Magnuson, B.A. (2005) "Age-Related Changes in Intestinal Crypt Density may Contribute to Increased Sensitivity of Soy-Fed Female Rats to Acute Toxicity of Azoxymethane." *FDA Science Forum*, Washington, DC. Project Ref. U.015

Type: Presentation

Publication: Francke-Carroll, S., Daly, K., Wang, T. and Magnuson, B. (2004). "Underlying Age-Related Liver Pathology Increases Azoxymethane Toxicity in Female F344 Rats in an Aging Study on Colon Cancer Chemoprevention." *Society of Toxicology Annual Meeting*, March, Baltimore, MD. Project Ref. U.015

Type: Presentation

Publication: Magnuson, B. (2004). "Comparison of the Effects of Curcumin Supplements in Young and Aged Rats." *JIFSAN Research Grant Symposium*, College Park, MD. Project Ref. U.015

Type: Presentation

Publication: Magnuson, B. and Francke-Carroll, S. (2003). "Comparison of the Growth and Pathology of Colonic Preneoplastic Lesions in Young and Adult F344 Rats Fed Various Diets." *Proceedings of the Frontiers in Cancer Prevention Research Conference A121*, Phoenix, AZ. Project Ref. U.015

Type: Presentation

Publication: Magnuson, B. (2003). "Aging Affects Response to Dietary Curcumin Supplements." *Food and Drug Administration Seminar, CFSAN*, College Park, MD. Project Ref. U.015

Type: Presentation

Publication: Francke-Carroll, S., Montgomery, J.E., Hines, F.A. and Magnuson, B.A. (2002). "The Effect of a Dietary Curcumin Supplement on the Development of Histopathological Age-Associated Changes in Male Azoxymethane-Treated F344 Rats." *Society of Toxicologic Pathology*. Denver, Colorado. Project Ref. U.015

Type: Presentation

Publication: Kwon, Y., Montgomery, J.E., Hines, F.A. and Magnuson, B.A. (2002). "Aging Alters the Inhibition of Colonic Aberrant Crypt Foci by Curcumin." *American Institute for Cancer Research Annual Research Conference*, Washington, DC. Project Ref. U.015

Type: Presentation

Publication: Malik, M. and Magnuson, B. (2002) "Semi-Quantitative Multiplex PCR Using LabChip Technology. CE in Biotechnology and Pharmaceutical Industries." *Practical Applications for Analysis of Proteins, Nucleotides and Small Molecules*, Washington, DC. Project Ref. U.015

Type: Presentation

Modeling the Antimicrobial Effect of Lactate on the Growth and Survival of *Listeria monocytogenes* on Ready to Eat Seafood

Date Started: 2001

Length (years): 3

Objective: To provide scientific information needed for HACCP analysis and microbial risk assessment of ready-to-eat seafood to diverse interest groups such as FDA, seafood industry, retailers, and consumers.

Researchers: Richard D. Whiting, Kisun Yoon

Topics: Microbial Hazards

Publications:

Publication: Yoon, K.S., Burnette, C.N., Abou Zeid, K. and Whiting, R.C. (2004). "Control of Growth and Survival of *Listeria monocytogenes* on Smoked Salmon by Combined Potassium Lactate and Sodium Diacetate and Freezing Stress During Refrigeration and Frozen Storage." *J. Food Prot.* 67(11):2465-2471. Project Ref. U.014

Type: Publication

Publication: Yoon, K.S., Burnette, C.N. and Whiting, R.C. (2003). "Effects of pH and Agitation on the Growth of *Listeria monocytogenes* in Brain Heart Infusion (BHI) Broth Containing Combined Potassium Lactate and Sodium Diacetate During Storage at 4 or 10 °C." *J. Food Prot.* 66(8): 1469-1473. Project Ref. U.014

Type: Publication

Publication: Abou-Zeid, K.A., Yoon, K.S., Oscar, T., Schwarz, J.G., Nassar, K., Hashem, F.M., Whiting, R.C. (2006). "Development and Validation of Tertiary Model for Predicting Growth Kinetics of *Listeria monocytogenes*." Scott A. International Association of Food Protection, Calgary, Canada. Project Ref. U.014

Type: Presentation

Publication: Abou-Zeid, K.A., Yoon, K.S., Oscar, T., Schwarz, J.G., Hashem, F.M., and Whiting, R.C. (2006). "Development and Validation of Primary and Secondary Models for Specific Growth Rate and Lag Time of *Listeria monocytogenes*." 106th American Society for Microbiology (ASM) meeting. Project Ref. U.014

Type: Presentation

Publication: Abou-Zeid, K.A., Yoon, K.S., Oscar, T.P. and Whiting, R.C. (2005). "Response Surface Model for Effects of Temperature, pH, and Lactate-Diacetate Concentrations on Growth Kinetics of *Listeria monocytogenes* in Brain Heart Infusion Broth." International Association of Food Protection, Baltimore, MD. Project Ref. U.014

Type: Presentation

Publication: Abou-Zeid, K.A. and Yoon, K.S. (2004). "Modeling the Antimicrobial Effect of Lactate on the Growth and Survival of *Listeria monocytogenes* on Ready to Eat Seafood." JIFSAN Research Presentation Symposium. Project Ref. U.014

Type: Presentation

Publication: Abou-Zeid, K.A. and Yoon, K.S. (2003). "Fate of *Listeria monocytogenes* in Brain Heart Infusion Broth Containing Combined Potassium Lactate and Sodium Diacetate at Various Temperatures." IFT Annual Meeting. Chicago, IL. Project Ref. U.014

Type: Presentation

Publication: Yoon, K.S. (2003) "Antimicrobial Effect of the Combination of Potassium Lactate and Sodium Diacetate on Growth and Survival of *Listeria monocytogenes*." Joint Institute of Food Safety and Applied Nutrition (JIFSAN), College Park, MD. Project Ref. U.014

Type: Presentation

Publication: Barratt, R.A., Yoon, K.S. and Whiting, R.C. (2002). "The Effect of pH and Agitation on the Growth of *Listeria monocytogenes* in Brain Heart Infusion (BHI) Broth Containing Combined Potassium Lactate and Sodium Diacetate Stored at 4 °C and 10 °C." International Association of Food Protection, 89th Annual Meeting, Technical program abstract, pp:54, San Diego, CA. Project Ref. U.014

Type: Presentation

Profile of Gene Expression in Hepatitis A Virus Infected Cells

Date Started: 2001

Length (years): 1

Objective: To develop improved detection and sub-typing methods for the detection of viral pathogens (HAV and NLV) in support of the development of food safety guidance and policies, and to contribute to surveillance, outbreak and traceback activities.

Researchers: Siddhartha Bhattacharya, Biswendu B. Goswami

Topics: Microbial Hazards

Publications: N/A

Development of Pathogen Detection Technology for Field Deployment

Date Started: 2001

Length (years): 3

Objective: To transfer a rapid, sensitive and specific, yet complex pathogen detection technology from the bench to the FDA Field Laboratories. The method targets enterohemorrhagic E. coli of O157:H7 through a specific hlyA sequence, generates amplicons using Strand Displacement Amplification (SDA), and visualizes amplicons through Fluorescence Polarization (FP). Objectives include improving the SDA workflow, developing protocols, training field operators, supervising field trials, and experimenting with the detection componentry to accommodate additional pathogens and new technologies. The progress to date was accomplished in collaboration with the University of Maryland and an industrial partner, both of which will provide expertise respectively in molecular biology and fluorescence detection.

Researchers: Sanjay Gummalla, Robert H. Hall

Topics: Pathogen Detection/Characterization

Publications: N/A

Characterization of Pathogenic Aquatic Eucaryotes and their Toxins (P-003)

Date Started: 2001

Length (years): 2

Objective: To characterize the absorption, metabolism, and elimination of marine toxins in finfish and shellfish. Preliminary data suggests 60%-80% of total toxicity present in shellfish is undetectable by the mouse bioassay and the toxic metabolites remain unidentified. For brevetoxins, developments of more definitive and efficient alternatives to the mouse bioassay are being sought through further characterization of toxin disposition in shellfish.

Researchers: Steven Plakas, Zhihong Wang

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Determination of Mutagenic Potentials in Milk from Lactating Dairy Cows Fed Aflatoxin-containing, Aflatoxin-decontaminated and Aflatoxin-free Feed (P-002)

Date Started: 2001

Length (years): 2

Objective: To determine the efficacy of reducing aflatoxin contamination levels in corn and cottonseed using the ammonia atmospheric pressure/ambient temperature zone treatments, and determine relative mutagenic potentials of aflatoxin decontamination by-products in milk from lactating dairy cows fed ammonia and ozone treated aflatoxin-contaminated feed rations.

Researchers: Douglas L. Park, Socrates Trujillo

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Pathogen Concentration from Food and Environmental Samples for "Real Time" Detection

Date Started: 2001

Length (years): 2

Objective: To develop simple reliable pathogen concentration procedures for food and environmental samples to allow the application of a variety of pathogen detection and enumeration methods based on: culturing; PCR amplification; flow cytometry; and biosensors/surface-enhancing Raman scatter

Researchers: Angelo DePaola, Michael Vickery

Topics: Pathogen Detection/Characterization

Publications: N/A

Using a Probabilistic Risk Assessment Model to Study Risk of E. coli Contamination in Hard Cheeses

Date Started: 2000

Length (years): 3

Objective: To develop a probabilistic risk assessment model to study risk of E.coli O157:H7 contamination in rennet-acid-conjugated cheeses and particularly hard cheeses (cheddar)

Researchers: Mohammed Modarres, Joseph Schlessler

Topics: Risk Assessments/Analysis

Publications: N/A

Antibiotic Resistance Integrons in Shiga Toxin -Producing Escherichia coli and Campylobacter jejuni/coli

Date Started: 2000

Length (years): 3

Objective: Characterization of antibiotic resistance and antibiotic resistance integron among Shiga toxin-producing E. coli isolates, and Campylobacter isolates and their antimicrobial susceptibility

Researchers: Jianghong Meng, David Wagner, David White, Shaohua Zhao

Topics: Microbial Hazards

Publications:

Publication: Ge, B., Girard, W., Zhao, S. and Meng, J. (2006). "Genotyping of Campylobacter spp. from Retail Meats by Pulsed-Field Gel Electrophoresis and Ribotyping." J. Appl. Microbiol. 100 (1):167-174. Project Ref. U.012

Type: Publication

Publication: Cui, S., Ge, B., Zheng, J. and Meng, J. (2005). "Prevalence and Antimicrobial Resistance of Campylobacter spp. and Salmonella Serovars in Organic Chickens from Maryland Retail Stores." Appl. Environ. Microbiol. 71 (7): 4108-4111. Project Ref. U.012

Type: Publication

Publication: Singh, R., Schroeder, C.M., Meng, J., White, D.G., Yang, H., McDermott, P.F., Wagner, D., Simjee, S., DebRoy, C., Walker, R.D. and Zhao, S. (2005). "Identification of Antimicrobial Resistance and Class 1 Integrons in Shiga Toxin-Producing Escherichia coli Recovered from Humans and Food Animals." J Antimicrob Chemother. 56 (1): 216-219. Project Ref. U.012

Type: Publication

Publication: Foley, S.L., Simjee, S., Meng, J., White, D.G., McDermott, P.F. and Zhao, S. (2004). "Evaluation of Molecular Typing Methods for Escherichia coli O157:H7 Isolates from Cattle, Food, and Humans." J. Food Prot. 67 (4): 651-657. Project Ref. U.012

Type: Publication

Publication: Schroeder, C. M., White, D.G., Ge, B., Zhang, Y., McDermott, Ayers, S., P.F. Zhao, S., and Meng, J. (2003). "Isolation of Antimicrobial Resistant Escherichia coli from Retail Meats Purchased in Greater Washington, D.C., USA." Intl. J. Food Microbiol. 85 (1-2): 197-202. Project Ref. U.012

Type: Publication

Publication: Ge, B., Bodies, S., Walker, R.D., White, D.G., Zhao, S., McDermott, P.F. and Meng, J. (2002). "Comparison of the Etest and Agar Dilution for in vitro Antimicrobial Susceptibility Testing of Campylobacter." Journal of Antimicrob Chemotherapy 50 : 487-494. Project Ref. U.012

Type: Publication

Publication: Schroeder, C. M. , Meng, J., Zhao, S., DebRoy, C., Torcolini, J., Zhao, C., McDermott, P.F., Wagner, D.D., Walker, R.D. and White, D.G. (2002). "Antimicrobial Resistance of Escherichia coli O26, O103, O111, O128 and O145 from Animals and Humans." *Emerging Infect. Dis.* 8 (12):1409-14. Project Ref. U.012

Type: Publication

Publication: Simjee, S., White, D.G., Wagner, D.D., Meng, J., Qaiyumi, S., Zhao, S. and McDermott, P.F. (2002). "Identification of vat(E) in Enterococcus Faecalis Isolates from Retail Poultry and Its Transferability to Enterococcus Faecium." *Antimicrob Agents Chemother.* 46 (12): 3823-28. Project Ref. U.012

Type: Publication

Publication: Zhao, C., Ge, B., De Villena, J., Sudler, R., Yeh, E., Zhao, S., White, D.G., Wagner, D. and Meng, J. (2001). "Prevalence of Campylobacter, Escherichia coli and Salmonella in Retail Chicken, Turkey, Pork, and Beef from the Greater Washington DC Area." *Appl. Environ. Microbil.* 67 (12): 5431-5436. Project Ref. U.012

Type: Publication

Publication: Zhao, S., White, D.G., Ge, B., Ayers, S., Friedman, S., English, L., Wagner, D., Gains, S. and Meng, J. (2001). "Identification and Characterization of Integron-Mediated Antibiotic Resistance Among Shiga Toxin-Producing Escherichia coli Isolates." *Appl. Environ. Microbil.* 67 (4): 1558-1564. Project Ref. U.012

Type: Publication

Publication: Zhao, S., White, D.G., McDermott, P.F., Friedman, S., English, L., Ayers, S., Meng, J., Maurer, J.J., Holland, R. and Walker, R.D. (2001). "Identification and Expression of Cephamycinase blaCMY Genes in Escherichia coli and Salmonella Isolates from Food Animals and Ground Meat." *Antimicrob Agents Chemother.* 45 (12): 3647-3650. Project Ref. U.012

Type: Publication

Publication: Ge, B., McDermott, P.F., White, D. and Meng, J. (2004). "The Role of Efflux Pumps and Target Gene Alteration in Antimicrobial Resistance of Campylobacter jejuni/coli." The 44th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington, DC. Project Ref. U.012

Type: Presentation

Publication: Ge, B., Zheng, J. and Meng, J. (2004). "Antimicrobial susceptibility of Campylobacter spp. and Salmonella serovars Isolated from Retail Organic Chickens." The 44th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington, DC. Project Ref. U.012

Type: Presentation

Publication: Meng, J. (2003). "Emerging antimicrobial resistance in foodborne pathogens." Keynote lecture, 5th International Symposium on the Epidemiology and Control of Foodborne Pathogens in Pork, Greece. Project Ref. U.012

Type: Presentation

Publication: Schroeder, C. M., Meng, J., White, D.G., Walker, R.D., Singh, R., McDermott, P.F., Wagner, D.D., DebRoy, C. and Zhao, S. (2003) "Characterization of Antimicrobial-Resistance Integrons Among Shiga Toxin-Producing Escherichia coli." The 5th International Symposium on Shiga Toxin (Verocytotoxin)-Producing Escherichia coli Infections, Scotland, UK. Project Ref. U.012

Type: Presentation

Publication: Ge, B., White, D.G., Zhao, S., McDermott, P.F., Walker, R.D. and Meng, J. (2002). "Antimicrobial-Resistant Campylobacter Isolated from Retail Raw Meats." 102nd Annu. Meet. Am. Soc. Microbiol., Salt Lake City, UT. Project Ref. U.012

Type: Presentation

Publication: Schroeder, M. C., White, D.G., Ge, B., Zhang, Y., McDermott, P.F., Ayers, S., Zhao, S. and Meng, J. (2002) "Isolation of Antimicrobial-Resistant Escherichia coli from Retail Meats Purchased in Greater Washington, DC." Conference on Antimicrobial Resistance, Bethesda, MD. Project Ref. U.012

Type: Presentation

Publication: Schroeder, C.M., Zhao, C., DebRoy, C., Torcolini, J., Zhao, S., White, D.G., Wagner, D.D., Walker, R.D. and Meng, J. (2002) "Antimicrobial resistance of Escherichia coli O157 Isolated From Humans, Cattle, Swine, and Food." 102nd Annual. Meet. Am. Soc. Microbiol., Salt Lake City, UT. Project Ref. U.012
Type: Presentation

Publication: Zhao, S., Ge, B., White, D. G., McDermott, P. F., Walker, R. D. and Meng, J. (2002). "Characterization of Antimicrobial Resistance of Campylobacter Isolated from Retail Raw Meats." Western Poultry Disease Conference, Mexico. Project Ref. U.012
Type: Presentation

Publication: Ge, B., Bodeis, S., Walker, R.D., White, D.G., Zhao, S., McDermott, P.F. and Meng, J. (2001). "Comparison of Etest and Agar Dilution Methods for Antibiotic Susceptibility Testing of Campylobacter Isolated from Retail Meats." Annual Meeting of National Antimicrobial Resistance Monitoring Program, Rockville, MD. Project Ref. U.012
Type: Presentation

Publication: Ge, B., White, D.G., Zhao, S., McDermott, P.F., Walker, R.D. and Meng, J. (2001). "Antimicrobial-Resistant Campylobacter Isolated from Retail Raw Meats in Greater Washington Area." The 11th Intl. Workshop on Campylobacter, Helicobacter and related organisms, Freiburg, Germany. Project Ref. U.012
Type: Presentation

Publication: Ge, B., Zhao, S., Gaines, S.A., Friedman, S. and Meng, J. (2001). "Genomic DNA Fingerprinting of Campylobacter Isolated from Retail Poultry Meats by Ribotyping and Pulsed-Field Gel Electrophoresis." 101st Annu. Meet. Am. Soc. Microbiol., Orlando, FL. Project Ref. U.012
Type: Presentation

The Evaluation and Removal of Bacterial Biofilms from Food and Food Processing Materials

Date Started: 2000

Length (years): 3

Objective: Development of Methods for the Culture and Analysis of Bacterial Biofilms on Food Processing Materials

Researchers: Laila H. Ali, Sam Joseph, Andrea Lomander, Paul Schreuders

Topics: Microbial Hazards

Publications:

Publication: Kim, M.S., Lefcourt, A.M., Chen, Y.R. and Tao, Y. (2005). "Automated Detection of Fecal Contamination of Apples Based on Multispectral Fluorescence Image Fusion." J. of Food Engineering, Vol. 71(1): 85-91. Project Ref. U.021
Type: Publication

Publication: Ma, L. and Tao, Y. (2005). "An Infrared and Laser Range Imaging System for Non-invasive Estimation of Internal Temperatures in Chicken Breasts During Cooking." Trans. of ASAE, Vol. 48(2):681-690. Project Ref. U.021
Type: Publication

Publication: Lomander, A., Schreuders, P.D. and Ali, L.H. (2000). "Analytical Techniques for the Evaluation of Biofilms on Food Processing Materials." Northeast Agricultural/Biological Engineering Conference, Ithaca, NY. Project Ref. U.011
Type: Presentation

Viral Immunosuppression and the Infection of Shell Eggs by Salmonella Enteritidis

Date Started: 2000

Length (years): 2

Objective: Examining the effect of Chicken Anemia Virus infection on salmonella shedding, immunobiology of Salmonella infections in the laying hen

Researchers: Uma Babu, Robert Heckert, Richard Raybourne, Wenxia Song

Topics: Microbial Hazards

Publications: N/A

Evaluation of Food Handling Practices, Awareness of Microbiological Hazards in Foods, and of Agricultural Practices of Fresh Fruit and Vegetable Producers in Costa Rica

Date Started: 2000

Length (years): 1

Objective: To evaluate, using survey methodology, the agricultural practices of approximately 100 packing houses and 400 producers involved in the production and export of fresh fruits and vegetables from Costa Rica to the U.S. Emphasis will be on Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs). A manual will be prepared describing the methodology used in the project. A second phase of the project will involve an evaluation, using survey methodology, of the food handling practices and hazard awareness of the Costa Rican population.

Researchers: Fernando Aguilar, Ruth De la Asunción, Carmen Ivankovich, Luís Jiménez, Carmela Vázquez

Topics: Risk Communication

Publications: N/A

Prevalence/Quantitation of L. monocytogenes in Selected Retail Products

Date Started: 2000

Length (years): 2

Objective: To evaluate the types and numbers of L. monocytogenes present in retail samples of certain ready to eat foods and then correlate those data with available consumption data to derive an exposure assessment. The exposure data will be compared with illness data collected by CDC concurrently and in the same geographic locations as the sample collection to assess risk of listeriosis from consumption of specific numbers or subtypes of L. monocytogenes.

Researchers: David E. Gombas

Topics: Microbial Hazards

Publications:

Publication: Gombas, D.E., Chen, Y., Clavero, R.S. and Scott, V.N. (2003). "Survey of Listeria monocytogenes in Ready-to-Eat Foods." Journal of Food Protection 66 (4): 559-569. Project Ref. C.011

Type: Publication

Developing Methodology to Detect Adverse Events

Date Started: 2000

Length (years): 2

Objective: To develop an Internet-based reporting system that will collect high quality data that can then be utilized not only by FDA, but also by the public. This will provide access to risk management information to the primary users of this database. The primary public users are hospitals and other facilities that use medical devices.

Researchers: Johnny Blair, Marilyn Flack, Timothy Triplett, Henry Wu, Song Zhao

Topics: Risk Communication

Publications: N/A

The Detection of Food Borne Pathogens in Biofilms Using Antibodies, Lectins and Fluorescent Dyes

Date Started: 1999

Length (years): 3

Objective: Examination of the formation of biofilms in model pathogenic food-borne bacteria

Researchers: Lewis Carr, Sam Joseph, Ben Tall, Ronald Weiner

Topics: Pathogen Detection/Characterization

Publications:

Publication: de Rezende, C.E., Anriany, Y., Carr, L.E., Joseph, S.W. and Weiner, R.M. (2005). "Capsular Polysaccharide Surrounds Smooth and Rugose Types of *Calmonella enterica* serovar Typhirmurium DT104†‡." *Applied and Environmental Microbiology*, 71 (11): 7345-51. Project Ref. U.009
Type: Publication

Publication: De Renzende, C., E. Teicher, L. Carr, B. Tall, R. Weiner and S. Joseph. (2000). "Detection of food-borne pathogens using Calcofluor and lectins." SIM International Symposium on Food-borne Pathogens. Crystal City, VA (abstract).
Type: Presentation

Publication: Sledjeski, D. and R. Weiner. (2000). "Regulation of EPS synthesis by nutrient concentration in *Shewanella colwelliana*." *Appl. Environ. Microbiol.* (In manuscript).
Type: Publication

Publication: De Renzende, C., E. Teicher, L. Carr, B. Tall, R. Weiner and S. Joseph. (2000). "Detection of food-borne pathogens using Calcofluor and lectins." *J. Industrial Microbiol. Biotechnology* (In manuscript).
Type: Publication

Publication: Langille, S., G. Geesey and R. Weiner. (2000). "Inhibition of *Hyphomonas rosenbergii* VP-6 capsular mediated adhesion by binding agents including metals, lectins and dyes." *JIMB* (In press).
Type: Publication

Publication: Weiner, R. M., M. Melick, K. O'Neill and E. Quintero. (2000). "*Hyphomonas adhaerens* sp. nov., *Hyphomonas johnsonii* sp. nov., and *Hyphomonas rosenbergii* sp. nov., Marine Budding and prothescate bacteria." *Int. J. Syst. Evolut. Microbiol.* 50:459-469.
Type: Publication

Immunologic Sequela Following Oral Exposure to a Foodborne Toxin

Date Started: 1999

Length (years): 3

Objective: To assess immunologic risk associated with different oral exposure levels of staphylococcal enterotoxins (SE). Provide improved exposure models for transcytosis of SE and potentially other toxins in food across the gut epithelium.

Researchers: Carol Pontzer, Mary Ann Principato, Richard Raybourne

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Food Safety Risk Perceptions among Professionals and Consumers

Date Started: 1999

Length (years): 1

Objective: Investigation of attitudes and perceptions associated with food safety risks to further understand why many individuals fail to adopt safe food handling recommendations.

Researchers: Robert Feldman, Mark A. Kantor, Alan S. Levy, Toija A. Riggins, Cynthia R. Turtle

Topics: Risk Communication

Publications: N/A

Effect of Moderate Dose Iron Supplementation on Zinc Absorption and Metabolism during Lactation

Date Started: 1999

Length (years): 1

Objective: To determine whether a single 60-mg dose of ferrous sulfate interferes with fractional zinc absorption at 7-9 weeks of lactation.

Researchers: Robert T. Jackson, Phylis Moser-Veillon, Isaac Rabbani

Topics: Applied Nutrition

Publications: N/A

Animal Health Sciences - Related to Characterizing the Genetic Resistance Determinants Responsible for Fluoroquinolone Resistance among Veterinary Isolates of *E. coli* and *Salmonella* spp.

Date Started: 1999

Length (years): 3

Objective: This research is partially funded through the USDA National Research Initiative Competitive Grants Program (NRICGP) in the Food Safety area. Data from this research investigation has yielded important information leading to better insight into the molecular mechanisms responsible for bacterial resistance to this powerful class of antimicrobials among veterinary *E. coli* and *Salmonella* strains. Provide information to identify whether there are potential public health implications regarding the use of fluoroquinolones in food animals in the U.S.

Researchers: Jianghong Meng, David White

Topics: N/A

Publications:

Publication: Chen, S., Cui, S., McDermott, P.F., Zhao, S., White, D.G., Paulsen, I. and Meng J. (2007). "Contribution of Target Gene Mutations and Efflux to Decreased Susceptibility in *Salmonella enterica* Serovar Typhimurium to Fluoroquinolones and Other Antimicrobials." *Antimicrob. Agents Chemother.*, 51(2):535-542. Project Ref. C.001

Type: Publication

Publication: Cui, S., Zheng, J. and Meng, J. (2006). "An Improved Method for Rapid Isolation of *Salmonella* from Chicken Carcasses." *Journal of Food Safety*. 26 (1):49-61. Project Ref. C.001

Type: Publication

Publication: Simjee, S., Zhang, Y., McDermott, P.F., Donabedian, S.M., Zervos, M.J. and Meng, J. (2006). "Heterogeneity of Vat(E) Carrying Plasmids in *Enterococcus faecium* Recovered from Human and Animal Sources." *Intl. J. of Antimicrob. Agents*. 28 (3): 200-205. Project Ref. C.001

Type: Publication

Publication: Zhao, S., Maurer, J.J., Hubert, S., De Villena, J.F., McDermott, P.F., Meng, J., Ayers, S., English, L. and White, D.G. (2005). "Antimicrobial Susceptibility and Molecular Characterization of Avian Pathogenic *Escherichia coli* isolates." *Vet. Microbiol.* 107(3-4):215-24. Project Ref. C.001

Type: Publication

Publication: Chen, S., Zhao, S., White, D.G., Schroeder, C.M., McDermott, P.F., Yang, H., Ayers, S. and Meng, J. (2004). "Characterization of Multiple-Antimicrobial-Resistant *Salmonella* Serovars Isolated from Retail Meats." *Appl. Environ. Microbil.* 70 (1): 1-7. Project Ref. C.001

Type: Publication

Publication: Yang, H., Chen, S., White, D.G., Zhao, S., Walker, R., McDermott, P.F. and Meng, J. (2004). "Characterization of Multiple-Antimicrobial-Resistant *Escherichia coli* Isolated from Chicken and Swine in China." *J. Clin. Microbil.* 42 (8): 3483-3489. Project Ref. C.001

Type: Publication

Publication: Simjee, S., White, D.G., Meng, J., Wagner, D.D., Qaiyumi, S., Zhao, S., Hayes, J.R. and McDermott, P.F. (2002). "Prevalence of Streptogramin Resistance Genes Among *Enterococcus* Isolates Recovered from Retail Meats." *J Antimicrob Chemother.* 50 (6):877-882. Project Ref. C.001

Type: Publication

Publication: White, D.G., Zhao, S., McDermott, P.F., Ayers, S., Gaines, S., Friedman, D.D., Wagner, D., Meng, J. Needle, D., Davis, M. and DebRoy, C. (2002). "Characterization of Antimicrobial Resistance Among *Escherichia coli* O111 Isolates of Animal and Human Origin." *Microb. Drug Resist.* 8 (2): 139-46. Project Ref. C.001

Type: Publication

Publication: White, D.G., Zhao, S., Sudler, R., Ayers, S., Friedman, S., McDermott, P.F., Chen, S., Wagner, D. and Meng, J. (2001). "The Isolation of Antibiotic-Resistant Salmonella from Retail Ground Meat." *N. England J. Med.* 345:1147-1154. Project Ref. C.001

Type: Publication

Publication: Jeong, D., Cui, S. and Meng, J. (2005). "The Role of Efflux Pumps and Outer Membrane Protein in the Susceptibility of *Escherichia coli* and *Salmonella Typhimurium* to Biocides". *Annu. Meet. Intl. Asso. Food Prot.*, Baltimore, MD. Project Ref. C.001

Type: Presentation

Publication: Cui, S., McDermott, P.F. and Meng, J. (2004). "Prevalence and Characterization of Salmonella Serovars from Retail Organic Chicken." *Annu. Meet. Am. Soc. Microbiol.*, New Orleans, LA. Project Ref. C.001

Type: Presentation

Publication: Yeh, E. and Meng, J. (2004). "Isolation of *Listeria Monocytogenes* from Retail Organic Chickens." *Annu. Meet. Am. Soc. Microbiol.*, New Orleans, LA. Project Ref. C.001

Type: Presentation

Publication: Simjee, S, Zhang, Y.Y., McDermott, P.F., Donabedian, S.M., Zervos, M.J. and Meng, J. (2003). "Heterogeneity of *vatE* Carrying Plasmids in *E. faecium* recovered from Human and Animal Sources." 43rd Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL. Project Ref. C.001

Type: Presentation

Publication: Chen, S., Zhao, S., White, G., McDermott, P.F. and Meng, J. (2002). "Characterization of Antimicrobial Resistant Salmonella." 102nd *Annu. Meet. Am. Soc. Microbiol.*, Salt Lake City, UT. Project Ref. C.001

Type: Presentation

Publication: De Villena, Meng, J. and White, D.G. (2002). "Fluoroquinolone Resistance of Avian *E. coli*." *Annu. Meet. Intl. Asso. Food Prot.*, San Diego, CA. Project Ref. C.001

Type: Presentation

Publication: Simjee, S, White, D.G., Carter, P.J., Zervos, M.J., Donabedian, S.M. Qaiyumi, S., Zhao S., Wagner, D.D., Meng, J. and McDermott, P.F. (2002). "Prevalence of Enterococcal Virulence Genes in Streptogramin-Resistant *E. faecium* Isolated from Retail Poultry and Humans and *gelE* Expression in a Streptogramin Resistant *E. faecium* Isolate." 42nd Interscience Conference on Antimicrobial Agents and Chemotherapy, San Diego, CA. Project Ref. C.001

Type: Presentation

Publication: Simjee, S., White, D.G., McDermott, P.F., Wagner, D.D., Hayes, J. and Meng, J. (2001). "Prevalence of Streptogramin Resistance Genes Among *Enterococcus faecium* Isolates Recovered from Retail Meats in the Greater Washington DC Area." 101st *Annu. Meet. Am. Soc. Microbiol.*, Orlando, FL. Project Ref. C.001

Type: Presentation

Publication: Wagner, D.D., Hayes, J.R. and Meng, J. (2001). "Antibiotic Resistance Profiles of *Enterococcus* spp. Isolated from Retail Meat." 101st *Annu. Meet. Am. Soc. Microbiol.*, Orlando, FL. Project Ref. C.001

Type: Presentation

Publication: Yang, H., Chen, S., White, D.G., Zhao, S., De Villena, F. and Meng, J. (2001). "Multiple Antimicrobial Resistance in Porcine *Escherichia coli* Isolated in China." 101st *Annu. Meet. Am. Soc. Microbiol.*, Orlando, FL. Project Ref. C.001

Type: Presentation

Publication: Zhao, S., White, D.G., Walker, R.D., McDermott, P.F., Friedman, S., English, L., Ayers, S., Meng, J., Maurer, J. and Holland, R. (2001). "Identification and Expression of the Cephamycinase Bla-

cmy gene of Escherichia coli and Salmonella Isolated from Animals and Food." 101st Annu. Meet. Am. Soc. Microbiol., Orlando, FL. (2001) Project Ref. C.001

Type: Presentation

Publication: Simjee, S., White, D.G., McDermott, P.F., Wagner, D.D., Hayes, J. and Meng, J. (2000). "Prevalence of Streptogramin Resistance Genes Among Enterococcus faecium Isolates Recovered from Retail Meats in the Greater Washington DC Area." Abstr. 1st Intl Sym. Resistant Gram-Positive Infections. San Antonio, TX. Project Ref. C.001

Type: Presentation

Publication: Sudler, R., White, D.G., Ayers, S., Zhao, S., Friedman, S., Wagner, D. and Meng, J. (2000). "Antimicrobial Resistance of Salmonella and Escherichia coli Isolated from Retail Meat Products." Abstr. 100th Annu. Meet. Am. Soc. Microbiol., Los Angeles, CA. Project Ref. C.001

Type: Presentation

Publication: White, D.G., Zhao, S., Ayers, S., Gaines, S., Friedman, S., Wagner, D., Debroy, C., Needle, D., Davis, M. and Meng, J. (2000). "Characterization of Antimicrobial Resistance Among Shiga-Toxin Producing Escherichia coli O111 Isolates." Abstr. 100th Annu. Meet. Am. Soc. Microbiol., Los Angeles, CA. Project Ref. C.001

Type: Presentation

Publication: Zhao, S., White, D., Ayers, S., Friedman, S., Ge, B., Meng, J., English, L., Wagner, D. and Gains, S. (2000). "Antibiotic Resistance Integrons in Shiga Toxin-producing E. coli." FDA Science Forum, Washington, DC. Project Ref. C.001

Type: Presentation

The Missing Connection: Isolation and Concentration of Microorganisms on Biocapture Surfaces

Date Started: 1998

Length (years): 2

Objective: This project seeks to develop methods to capture and concentrate pathogenic microorganisms from relevant biological samples.

Researchers: Mary Carson, Catherine Fenselau, David Wagner

Topics: Pathogen Detection/Characterization

Publications:

Publication: Bundy, J. L.; Fenselau, C. "Lectin and Carbohydrate Affinity Capture Surfaces for Mass Spectrometric Analysis of Microorganisms." Anal. Chem. 2000, in press.

Type: Publication

Publication: Bundy J.L. "Development of Biocapture Surfaces for Mass Spectrometric Analysis of Microorganisms. Seminar Presented to the Center for Veterinary Medicine, Food and Drug Administration." October, 2000.

Type: Presentation

Publication: Bundy J.L. "Development of Biocapture Surfaces For Mass Spectrometric Analysis of Microorganisms." Seminar Presented to the Chemical and Analytical Sciences Division, Oak Ridge National Laboratory, September, 2000.

Type: Presentation

Publication: Bundy, J. L.; Fenselau, C. "Carbohydrate Affinity Capture Surfaces for Mass Spectrometric Analysis of Microorganisms." Presented at the 48th ASMS Conference on Mass Spectrometry and Allied Topics, Long Beach CA, June, 2000.

Type: Presentation

Surveillance of Poultry and Other Stock for Carriage of Multiresistant Enterococcus

Date Started: 1998

Length (years): 3

Objective: To investigate the biological activities of individual and mixture of dietary carotenoids and their metabolites in several in vitro and in vivo models of chemoprevention. These are: (a) intercellular gap-junctional communication proteins in an in vitro model; (b) the detoxication (phase 2) enzymes in an in vitro model; (c) an in vivo anti-inflammatory model. The results from these studies will allow the investigators to determine structural requirement and chemopreventive potency of dietary carotenoids and their metabolites. Based on these findings, a multicarotenoid supplement consisting of a mixture of dietary carotenoids and their metabolites could be developed by scientists for clinical chemoprevention trials of chronic diseases such as cancer and cardiovascular.

Researchers: Lewis E. Carr, Linda Tollefson, David Wagner, David White

Topics: Microbial Hazards

Publications:

Publication: Hayes, J.R., English, L.L., Carr, L.E., Wagner, D.D. and Joseph, S.W. (2004). "Multiple-Antibiotic Resistance of Enterococcus spp. Isolated from Commercial Poultry Production Environments." Applied and Environmental Microbiology, 70 (10): 6005-6011. Project Ref. U.004

Type: Publication

Publication: Joseph, S. W. "Association of Antibiotic Resistant Enterococci with Poultry." JIFSAN Advisory Council, College Park, MD, October 21, 1999.

Type: Presentation

Publication: Hayes, J. R., D. D. Wagner, L. L. English, L. E. Carr, and S. W. Joseph. "Detection of Multiresistant Enterococci in the Poultry Environment." SPSS/International Poultry Exhibition, Atlanta, GA, January 17, 2000.

Type: Presentation

Publication: Joseph, S. W. "Implications of Multiresistant Enterococci in Poultry." Center for Food Safety, Quality, and Environment, University of Georgia, Athens, GA, March 7, 2000.

Type: Presentation

Publication: English, L. L., J. R. Hayes, D. G. White, S. W. Joseph, L. E. Carr and D. D. Wagner. "Antibiotic Susceptibility Profiles of Enterococcus Isolates from the Poultry Production Environment." FDA Science Forum - FDA and the Science of Safety: New Perspectives, Washington, D.C., February 2000.

Type: Presentation

Publication: Joseph, S. W. "Antibiotic Resistance in Enterococcus spp. in Agriculture." CSL/JIFSAN Joint Symposium on Food Safety and Nutrition: Risk Assessment and Communication in Food Safety, York, UK, June 21, 2000.

Type: Presentation

Immunoaffinity Ultrafiltration for High Throughput Screening/Residue Analysis in Food Safety

Date Started: 1998

Length (years): 3

Objective: Develop immunoaffinity membrane ultrafiltration, which integrates membrane separation with the specificity of antigen-antibody interactions, for multiresidue analysis of veterinary drugs, pesticides, toxicants, and mycotoxins in foods, agricultural commodities, and environmental samples.

Researchers: Cheng Lee, Mary Trucksess

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Effects of a Variety of Stress Factors on Immune System of Poultry and Subsequent Infection of Shell Eggs by Salmonella

Date Started: 1998

Length (years): 3

Objective: Examine the immune response of hens orally inoculated with different dosages of Salmonella enteritidis. Compare the immune response of hens at a time just after receiving the bacteria versus a designated time long after the inoculation.

Researchers: Richard Raybourne, Wenxia Song

Topics: Microbial Hazards

Publications:

Publication: Zheng, J., Meng, J., Zhao, S., Singh, R. and Song, W. (2006). "Adherence to and Invasion of Human Intestinal Epithelial Cells by Campylobacter jejuni and Campylobacter coli Isolates from Retail Meat Products." J. Food Prot. 69 (4): 768-774. Project Ref. U.025 & U.002

Type: Publication

Publication: Sheela, R.R., Babu, B., Mu, J., Subbiah, E., Bautista, D.A., Raybourne, R.B., Heckert, R.A. and Song, W. (2003). "Immune Responses Against Salmonella Enterica Serovar Enteritidis Infection in Virally Immunosuppressed Chickens." Clinical and Diagnostic Laboratory Immunology. 10(4): 670-9. Project Ref. U.025 & U.002

Type: Publication

Publication: Zheng, J., Meng, J. and Song, W. (2007). "Campylobacter-induced Polarized Secretion of IL-8 in Human Intestinal Epithelial Cells Requires Campylobacter-secreted CDT and TLR-Induced Activation of NF-kB." Intl Asso. Food Prot., Orlando, FL. Project Ref. U.025 & U.002

Type: Presentation

Publication: Zheng, J., Meng, J. and Song, W. (2006). "IL-8 secretion of Human Intestinal Epithelial Cells Induced by Campylobacter jejuni/coli." ASM Annual Meeting, Orlando, FL. Project Ref. U.025 & U.002

Type: Presentation

Publication: Zheng, J., Meng, J. and Song, W. (2005). "Campylobacter Induces a Polarized Secretion of IL-8 Human Intestinal Epithelial Cells." Microbial Pathogenesis and Host Response. Cold Spring Harbor Laboratory, New York, NY. Project Ref. U.025 & U.002

Type: Presentation

Publication: Song, W. (2004). "Campylobacter jejuni-host Interaction on the Intestinal Mucosal Surface." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. U.025 & U.002

Type: Presentation

Mechanism of Chemoprevention by Dietary Carotenoids and Their Metabolites in the Prevention of Chronic Disease in Humans

Date Started: 1998

Length (years): 3

Objective: Investigate if carotenoids and their metabolites can cross the brain-blood barriers, and if so how these essential groups of nutrients are distributed throughout the various parts of the human brain

Researchers: Shirley Blakely, Frederick Khachik, Andrija Kornhauser, Eugene Mazzola,

Topics: Applied Nutrition

Publications:

Publication: Khachik, F., Chang, A.N., Gana, A. and Mazzola, E. (2007). "Partial Synthesis of (3R,6'R)-a-Cryptoxanthin and (3R)-b-Cryptoxanthin from (3R,3'R,6'R)-Lutein." J. Nat. Prod., 70 (2): 220-226. Project Ref. U.001

Type: Publication

Publication: Khachik, F. (2006). "Distribution and Metabolism of Dietary Carotenoids in Humans as a Criterion for Development of Nutritional Supplements." Pure Appl. Chem., 78 (8): 1551-57. Project Ref.

U.001

Type: Publication

Publication: Khachik, F., De Moura, F., Chew, E., Douglass, L.W., Ferris III, F., Kim, J. and Thompson, D.J.S. (2006). "The effect of lutein and zeaxanthin supplementation on metabolites of these carotenoids in the serum of persons aged 60 years or older." *J. Invest. Ophthalmol. Vis. Sci.*, 47 (12): 5234-42.

Project Ref. U.001

Type: Publication

Publication: Khachik, F., London, E., De Moura, F., Johnson, M., Steidl, S., DeTolla, L., Shipley, S., Sanchez, R., Chen, X.Q., Flaws, J., Luty, G., McLeod, S. and Fowler, B. (2006). "Chronic Ingestion of (3R,3'R,6'R)-Lutein and (3R,3'R)-Zeaxanthin in Female Rhesus Macaque." *J. Invest. Ophthalmol. Vis. Sci.*, 47 (2): 5476-86, 2006. Project Ref. U.001

Type: Publication

Publication: Rosenthal, J.M., Kim, J., De Monastario, F., Thompson, D.J.S., Bone, R.A., Landrum, J.T., De Moura, F., Khachik, F., Chen, H., Schleicher, R.L., Ferris III, F. Y., Chew, E.Y. (2006). "Dose Ranging Study of Lutein Supplementation in Persons Aged 60 Years or Older." *J. Invest. Ophthalmol. Vis. Sci.*, 47 (12): 5227-33. Project Ref. U.001

Type: Publication

Publication: Khachik, F. (2004). "Chemical and Metabolic Oxidation of Carotenoids." *Carotenoids and Retinoids, Molecular Aspects and Health Issues*, Packer, L.; Obermuller-Jevic, U.; Kraemer, K.; Sies, H.; Eds; AOCS Press, Champaign, Illinois, Chapter 4, pp 61-75. (Book Chapter) Project Ref. U.001

Type: Publication

Publication: Sahin, K., Ozercan, R., Onderci, M., Sahin, N., Gursu, M.F., Khachik, F., Sarkar, F.H., Munkarah, A., Ali-Fehmi, R., Kmak, D. and Kucuk O. (2004). "Lycopene Supplementation Prevents the Development of Spontaneous Smooth Muscle Tumors of the Oviduct in Japanese Quail." *Nutrition and Cancer-an International Journal*, 50 (2): 181-189. Project Ref. U.001

Type: Publication

Publication: Blakely, S.R, Herbert, A., Collins, M., Jenkins, M., Mitchell, G., Grundel, E., O'Neill, K. R. and Khachik, F. (2003). "Lutein Interacts with Ascorbic Acid More Frequently than with α -Tocopherol to Alter Biomarkers of Oxidative Stress in Female Zucker Obese Rats." *J. Nutr.* 133 (9): 2838-2844. Project Ref. U.001

Type: Publication

Publication: Gann, P. H. and Khachik, F. (2003). "Tomatoes or Lycopene Versus Prostate Cancer: Is Evolution Anti-Reductionist." Editorial in *J. Natl. Cancer Inst.* 95 (21): 1563-1565, 2003. Project Ref. U.001

Type: Publication

Publication: Humphries, J.M. and Khachik, F. (2003). "Distribution of Lutein, Zeaxanthin and Related Geometrical Isomers in Fruit, Vegetables, Wheat and Pasta Products" *J. Agric. Food Chem.* 51 (5): 1322-1327. Project Ref. U.001

Type: Publication

Publication: Khachik, F. (2003). "An Efficient Conversion of (3R,3'R,6'R)-Lutein to (3R,3'S,6'R)-Lutein (3'-Epilutein) and (3R,3'R)-Zeaxanthin." *J. Nat. Prod.*, 66 (1): 67-72. Project Ref. U.001

Type: Publication

Publication: Khachik, F., Telang, Fumio Enjo, F. and Lipkin, M. (2003). "Development of a Mixture of Dietary Carotenoids as Cancer Chemopreventive Agents: C57BL/6J Mice as a Useful Animal Model for Efficacy Studies with Carotenoids." *Phytochemicals: Mechanisms of Action*, Meskin, M., Bidlack, W.R., Davis, A.J., Lewis, D.S. and Randolph, R.K. (Eds), CRC Press, Boca Raton, FL, Chapter 10, page 163-176. Project Ref. U.001

Type: Publication

Publication: Khachik, F., Carvalho, L., Bernstein, P.S., Muir, G.J., Zhao, D.Y. and Katz, N.B. (2002). "Chemistry, Distribution, and Metabolism of Tomato Carotenoids and Their Impact on Human Health." *Exp. Biol. Med.*, 227 (10), 845-851. Project Ref. U.001

Type: Publication

Publication: Khachik, F., Moura F.F., Zhao, D.Y., Aebischer, C.P. and Bernstein, P.S. (2002). "Transformations of Selected Carotenoids in Plasma, Liver, and Ocular Tissues of Humans and in Nonprimate Animal Models." *J. Invest. Ophthalmol. Vis. Sci.* 43 (11): 3383-3392. Project Ref. U.001
Type: Publication

Publication: Kucuk, O., Sarkar, F.H., Djuric, Z., Sakr, W., Pollak, M., Khachik, F., Banerjee, M., Bertram, J. and Wood Jr., D.P. (2002). "Effects of Lycopene Supplementation in Patients with Localized Prostate Cancer." *Exp. Biol. Med.* 227 (10): 881-885. Project Ref. U.001
Type: Publication

Publication: Kucuk, O., Sarkar, F.H., Sakr, W., Khachik, F., Djuric, Z., Banerjee, M., Pollak, M.N., Bertram, J.S. and Wood, D.P. Jr. (2002). "Lycopene in the Treatment of Prostate Cancer." *Pure & Appl. Chem.*, 74 (8): 1443-1450. Project Ref. U.001
Type: Publication

Publication: Bernstein, P.S., Khachik, F., Carvalho, L.S., Muir, G.J., Zhao, D.Y. and Katz, N.B. (2001). "Identification and Quantitation of Carotenoids and their Metabolites in the Tissues of the Human Eye." *Exper. Eye Res.*, 72 (3): 215-223. Project Ref. U.001
Type: Publication

Publication: Kucuk, O., Sarkar, F.H., Sakr, W., Djuric, Z., Pollak, M.N., Khachik, F., Li, Y.W., Banerjee, M., Gringnon, D., Bertram, J.S., Crissman, J.D., Pontes, E.J. and Wood Jr., D.P. (2001). "Phase II Randomized Clinical Trial of Lycopene Supplementation before Radical Prostatectomy." *Cancer Epidemiology, Biomarkers, and Prevention*, 10 (8): 861-868. Project Ref. U.001
Type: Publication

Publication: Blakely, S.R., Grundel, E. and Khachik, F. (2000). "Vitamin E Enhances Lutein Bioavailability in Zucker Lean But Not Obese Female Rats." *FASEB Journal*, 14 (4), A235. Project Ref. U.001
Type: Publication

Publication: Bertram J.S., King, T., Fukushima, L. and Khachik, F. (2000). "Enhanced Activity of an Oxidation Product of Lycopene Found in Tomato Products and Human Serum Relevant to Cancer Prevention." *Antioxidant and Redox Regulation of Genes*, Sen, C.K.; Sies, H.; Baeuerle, P.A. (eds), Academic Press, San Diego, Chapter 18, page 409-424. Project Ref. U.001
Type: Publication

Publication: Nishino, H., Tokuda, H., Murakoshi, M., Satomi, Y., Masuda, M., Onozuka, M., Yamaguchi, S., Takayasu, J., Tsuruta, J., Okuda, M., Khachik, F., Narisawa, T., Takasuka, N. and Yano, M. (2000). "Cancer Prevention by Natural Carotenoids." *BioFactors*, 13 (1-4): 89-94. Project Ref. U.001
Type: Publication

Publication: Nishino, H., Tokuda, H., Murakoshi, M., Satomi, Y., Matsumoto, H., Masuda, M., Bu, P., Onozuka, M., Yamaguchi, S., Okuda, Y., Takayasu, J., Nishino, A., Tsuruta, J., Okuda, M., Ichiishi, E., Nosaka, K., Konoshima, T., Kato, T., Nir, Z., Khachik, F., Misawa, N., Narisawa, T. and Takasuka, N. (2000). "Cancer Prevention by Carotenoids and Curcumin." In: *Phytochemicals as Bioactive Agents*, Bidlack, W.R. (ed), Technomic Publishing, Lancaster, PA., page 161-166. (Book Chapter) Project Ref. U.001
Type: Publication

Publication: Scholz, T.A., Hata, T.R., Pershing, L.K., Gellermann, W., McClane, R., Alexeeva, M., Irmakov, I. and Khachik, F. (2000). "Non-Invasive Raman Spectroscopic Detection of Carotenoids in Human Skin." *J. Invest. Dermatology*. 115 (3): 441-448. Project Ref. U.001
Type: Publication

Publication: Cohen, L. A., Zhao, Z., Pittman, B. and Khachik, F. (1999). "Effect of Dietary Lycopene on N-Methylnitrosourea-Induced Mammary Tumorigenesis." *Nutrition and Cancer*, 34 (2): 153-159. Project Ref. U.001
Type: Publication

Publication: Khachik, F., Bertram, J.S., Huang, M.T., Fahey, J.W. and Talalay, P. (1999). "Dietary Carotenoids and Their Metabolites as Potentially Useful Chemopreventive Agents Against Cancer." Antioxidant Food Supplements in Human Health, Packer, L.; Hiramatsu, M.; and Yoshikawa, T. (eds), Academic Press, Tokyo, Chapter 14, page 203-229. (Book Chapter) Project Ref. U.001
Type: Publication

Publication: Khachik, F., Cohen, L. and Zhao, Z. (1999). "Metabolism of Dietary Carotenoids and Their Possible Role in Prevention of Cancer and Macular Degeneration." Functional Foods for Disease Prevention I, Shibamoto, T., Terao, J., Osawa, T. (Eds.), American Chemical Society Symposium Series, Oxford University Press, Chapter 7, page 71-85, 1999. (Book Chapter) Project Ref. U.001
Type: Publication

Publication: Khachik, F., Steck, A. and Pfander, H. (1999). "Isolation and Structural Elucidation of (13Z,13'Z,3R,3'R,6'R)-Lutein from Marigold Flowers, Kale, and Human Plasma." J. Agric. Food Chem., 47 (2): 455-461. Project Ref. U.001
Type: Publication

Publication: Kim, J. M., Araki, S., Kim, D. J., Park, C.B., Takasuka, N., Baba-Toriyama, H., Ota, T., Nir, Z., Khachik, F., Schimidzu, N., Tanaka, Y., Osawa, T., Uraji, T., Murakoshi, M., Nishino, H. and Tsuda, H. (1998). "Chemopreventive Effects of Carotenoids and Curcumins on Mouse Colon Carcinogenesis After 1, 2-Dimethylhydrazine Initiation" Carcinogenesis, 19 (1): 81-85. Project Ref. U.001
Type: Publication

Publication: Khachik, F., Askin, F.B. and Lai, K. (1998). "Distribution, Bioavailability, and Metabolism of Carotenoids in Humans." Phytochemicals, a New Paradigm, Bidlack, W.R.; Omaye, S.T.; Meskin, M.S.; Jahner, D. (Eds.), Technomic Publishing, Lancaster, PA., Chapter 5, page 77-96. Project Ref. U.001
Type: Publication

Publication: Khachik, F., Pfander, H. and Traber, B. (1998). "Proposed Mechanisms for the Formation of the Synthetic and Naturally Occurring Metabolites of Lycopene in Tomato Products and Human Serum." J. Agric. Food Chem., 46 (12): 4885-4890. Project Ref. U.001
Type: Publication

Publication: Khachik, F., Steck, A., Niggli, U.A., and Pfander, H. (1998). "Partial Synthesis and Structural Elucidation of the Oxidative Metabolites of Lycopene Identified in Tomato Paste, Tomato Juice and Human Serum." J. Agric. Food Chem., 46 (12): 4874-4884. Project Ref. U.001
Type: Publication

Publication: Zhao, Z., Khachik, F., Richie, Jr., J. P. and Cohen, L. A. (1998). "Lycopene Uptake and Tissue Disposition in Male and Female Rats." Soc. Exper. Biol. & Med., 218 (2): 109-114. Project Ref. U.001
Type: Publication

Publication: Khachik, F. (2007). "Chronic Supplementation of Lutein and Zeaxanthin in the Female Rhesus Macaque." CARIG Conference on Carotenoids, Washington DC. Project Ref. U.001
Type: Presentation

Publication: Khachik, F. (2005). "Distribution and Metabolism of Dietary carotenoids in Humans as a Criterion for Development of Nutritional Supplements. Plannary Lecture." 14th International Carotenoid Symposium Edinburgh, Scotland. Project Ref. U.001
Type: Presentation

Publication: Khachik, F. (2005). "Distribution, Metabolism, and the Role of Tomato Carotenoids in Disease Prevention." Symposium entitled "Lycopene and Other Carotenoids" 229th American Chemical Society National Meeting, San Diego, California. Project Ref. U.001
Type: Presentation

Publication: Khachik, F., de Moura, F.F., Chew, E., Douglass, L.W., Csaky, K., Ferris III, F., Dabas, K. and Sran, P. (2005). "Dose Ranging Study of Lutein Supplementation in Elderly with and without Age Related Macular Degeneration." 14th International Carotenoid Symposium Edinburgh, Scotland. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. and Liu, Y. (2005). "Showalter, H. Industrial Processes for Partial Synthesis of (3R)-b-cryptoxanthin and (3R, 6'R)-a-cryptoxanthin from (3R, 3'R, 6'R)-lutein." 14th International Carotenoid Symposium Edinburgh, Scotland. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., London, E., de Moura, F.F., Johnson, M., Steidl, S., Detolla, L., Shipley, S., Sanchez, B.; Chen, X.Q.; Flaws, J.; Fowler, B.; Luty, G. and McLeod, S. (2005). "Chronic Ingestion of (3R, 3'R, 6'R)-lutein and (3R, 3'R)-zeaxanthin in Female Rhesus Macaque Primates." 14th International Carotenoid Symposium Edinburgh, Scotland. Project Ref. U.001

Type: Presentation

Publication: Zhan, G., Khachik, F., Sulaiman, P. and Camras, C.B. (2005). "Effect of Lutein, Zeaxanthin, a- and b-cryptoxanthin, Lycopene, and Their Mixture on Oxidative Stress in Cultures of Normal and Glaucoma Human Ciliary Muscle Cells and Rat Retinal Ganglion Cells." 14th International Carotenoid Symposium Edinburgh, Scotland. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2004). "Chemical and Metabolic Oxidation of Carotenoids." The XI Oxygen Club of California, 2004 Congress, Santa Barbara, California. Project Ref. U.001

Type: Presentation

Publication: Sahin, K., Ozercan, R., Onderci, M., Sahin, N., Gursu, M., Khachik, F., Sarkar, F.H., Munkarah, A., Ali-Fehmi, R., Kmak, D. and Kucuk, O. (2004) "Lycopene Supplementation Prevents the Development of Spontaneous Smooth Muscle Tumors of the Oviduct in Japanese Quail." FASEB, Washington, DC. Project Ref. U.001

Type: Presentation

Publication: Chew, E. Y., Ferris III, F.L., deMonasterio, F. M., Thompson, D. J., Kim, J., Csaky, C.G., Woods, M., Khachik, F., Bone, R. and Landrum, J. (2003). "Dose Ranging Study of Lutein Supplementation in Persons over Age 60, Association for Research in Vision and Ophthalmology (ARVO)." Fort Lauderdale, Florida. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2003). "Distribution, Metabolism, and Physiological Functions of Lutein and Zeaxanthin in Disease Prevention." A Conference on the Role of Lutein and Zeaxanthin in the Prevention of Macular Degeneration, Organized by Agencia Nacional de Vigilancia Sanitaria (ANVISA), Government of Brazil, Brasilia, Brazil. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2003). "Distribution, Metabolism, and the Role of Carotenoids in Disease Prevention." An International Ceres à Forum, Examining the Health Benefits of Lycopene from Tomatoes Organized by Center for Food and Nutrition Policy at Virginia Tech, Washington, DC. Project Ref. U.001

Type: Presentation

Publication: Bernstein, P. S., Zhao, D.-Y., de Moura, F. F., Aebischer, C. and Khachik, F. (2002). "Metabolic Transformations of Carotenoids in Ocular Tissues of Humans and Non-Primate Animal Models." Association for Research in Vision and Ophthalmology (ARVO), Fort Lauderdale, Florida. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2002). "Development of Industrial Processes for Production of 3'-Epilutein, (3R, 3'R)-Zeaxanthin, (3R, 6'R)-a-Cryptoxanthin, and (3R)-b-Cryptoxanthin from Technical Grade (3R, 3'R, 6'R)-Lutein." 13th International Symposium on Carotenoids, Honolulu, HI. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., de Moura, F.F., Bernstein, P.S., Zhao, D.Y. and Aebischer, J.C. (2002). "Distribution and Metabolism of Ocular Carotenoids in Humans and Non-Primate Animal Models." 13th International Symposium on Carotenoids, Honolulu, HI. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Telang, N., T., Enjo, F. and Lipkin, M. (2002). "Bioavailability of Major Dietary Carotenoids in C57BL/6J Mice Administered a Formulated Multicarotenoid Mixture." 13th International Symposium on Carotenoids, Honolulu, HI. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Telang, N. and Lipkin, M. (2002). "Development of a Mixture of Dietary Carotenoids as Cancer Chemopreventive Agents: C57BL/6J Mice as a Useful Animal Model for Efficacy Studies with Carotenoids." Phytochemicals: Mechanisms of Action." College of Agriculture, California State Polytechnic University, Pomona, California. Project Ref. U.001

Type: Presentation

Publication: Kucuk, O., Sakr, W., Djuric, Z., Pollak, M., Khachik, F., Parchment, R., Belinsky, S., Banerjee, M., Bertram, J. and Wood, D. (2002). "Lycopene and Prostate Cancer" 13th International Symposium on Carotenoids, Honolulu, HI. Project Ref. U.001

Type: Presentation

Publication: Lee, H.S., Khachik, F. and Park, J. H.Y. (2002). "Lycopene Reduces Levels of Insulin-Like Growth Factor-I Receptor (IGF-1R), Insulin Receptor Substrate (IRS-1), Akt, and Mitogen-Activated Protein Kinase (MAPK) in Human Colon Cancer HT-29 Cells." FASEB, New Orleans. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2001). "Development of a Multicarotenoid Dietary Supplement for Chemoprevention of Cancer and Age-related Macular Degeneration." International Food Ingredients & Additives Exhibition and Conference, Tokyo, Japan. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Carvalho, L., Bernstein, P.S., Muir, G.J., Zhao, D.Y. and Katz, N.B. (2001). "Chemistry, Distribution, and Metabolism of Tomato Carotenoids and Their Impact on Human Health." International Symposium on the Role of Tomato Products and Carotenoids in Disease Prevention, New York, NY. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Carvalho, L., Bernstein, P.S., Muir, G.J., Zhao, D.Y. and Katz, N.B. (2001). "Distribution of Carotenoids and Their Metabolites in the Ocular Tissues of Humans, Quails, and Frogs: Useful Non-primate Animal Models for Investigating the Metabolic Transformation of Macular Carotenoids." Gordon Research Conference on Carotenoids, Ventura, California. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Carvalho, L., Telang N., Fumio, E. and Lipkin, M. (2001). "Bioavailability and Tissue Disposition of Major Dietary Carotenoids in C57BL/6J Mice Administered a Formulated Multicarotenoid Mixture." Gordon Research Conference on Carotenoids, Ventura, California. Project Ref. U.001

Type: Presentation

Publication: Humphries, J., Graham, R., McIntosh, G., Worsley, T. and Khachik, F. (2000). "The Role of Carotenoids in Human Health" First South East Asia and Pacific Regional Meeting on Carotenoids, Bangkok, Thailand. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2000). "Bioavailability and Metabolism of Dietary Carotenoids." International Conference and Exhibition on Nutraceuticals and Functional Foods, Houston, Texas. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2000). "Distribution, Bioavailability, and Metabolism of Lycopene in Humans." Prostate Cancer Prevention 2000: The Role of Nutrition, Organized by Faculty of Medicine, University of Toronto, Toronto, Canada. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2000). "Distribution of Carotenoids in Human Serum and Tissues." First South East Asia and Pacific Regional Meeting on Carotenoids, Bangkok, Thailand. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2000). "Mechanistic Studies on Carotenoids and Their Metabolites in the Prevention of Chronic Diseases." International Conference and Exhibition on Nutraceuticals and Functional Foods, Houston, Texas. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (2000). "Update on Carotenoid Analysis." First South East Asia and Pacific Regional Meeting on Carotenoids, Bangkok, Thailand. Project Ref. U.001

Type: Presentation

Publication: Blakely, S.R., Khachik, F., Grundel, E., Collins, M.L., Wahi, M.B. and Kornhauser, A. (1999). "Bioavailability of α -tocopherol and Lutein in Obese and Lean Female Zucker Rats." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (1999). "Development of a Multicarotenoid Dietary Supplement for Chemoprevention of Cancer and Macular Degeneration." 2nd International Conference on Food Factors, Chemistry and Health Promotion, Kyoto, Japan. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (1999). "Nutritional Benefits of Dietary Carotenoids and Their Metabolites in Disease Prevention." 8th Asian Congress of Nutrition, Seoul, Korea. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Mazzola, E. and Wahi, M. (1999). "Total Synthesis of 2, 6-Cyclolycopene-1, 5-diol: An Oxidative Metabolite of Lycopene in Tomatoes, Tomato-Based Food Products, and Human Serum." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Bernstein, P.S., Squires, A. and Rosser, J.M. (1999). "Identification of Carotenoids and Related Metabolites in Frog Retina and Liver: A Useful Non-Primate Model for Studying the Physiological Role of Macular Carotenoids." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Khachik, F., Scholz, T., Hata, T., Askin, A., and Lai, K. (1999). "Distribution of Carotenoids in Human Organs and Tissues." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Kucuk, O., Sakr, W., Sarkar, F., Djuric, Z., Li, Y.W., Khachik, F., Velazquez, F., Heilbrun, L., Bertram, J.S., Crissman, J.D., Pontes, E. and Wood, D.P. (1999). "Lycopene Supplementation in Men with Prostate Cancer (PCa) Reduces Grade and Volume of Preneoplasia (PIN) and Tumor, Decreases Serum Prostate Specific Antigen (PSA) and Modulates Biomarkers of Growth and Differentiation." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Rosser, J.M., Khachik, F. and Graham, R.D. (1999) "Distribution of Lutein and Zeaxanthin and Related Geometrical Isomers in Fruits, Vegetables, Wheat, and Pasta Products." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Sperrazzo, P., Gellenbeck, K., Khachik, F. and Bubrick, P. (1999). "Differential Cellular Distribution of Carotenoid Pigments in Three Strains of the Alga *Dunaliella Salina*." 12th International Symposium on Carotenoids, Cairns, Australia. Project Ref. U.001

Type: Presentation

Publication: Squires, A., Katz, N.B, Khachik, F. and Bernstein, P.S. (1999). "Analysis of Xanthophylls and Carotenol Esters in the Frog Retina." Association of Research in Vision and Ophthalmology (ARVO), Fort Lauderdale, FL. Project Ref. U.001

Type: Presentation

Publication: Khachik, F. (1998). "Bioavailability, Metabolism, and Safety of Lutein and Zeaxanthin Supplementation." National Eye Institute Work-Shop, Bethesda, Maryland. Project Ref. U.001
Type: Presentation

Publication: Khachik, F. (1998). "Dietary Carotenoids and Their Oxidation Products in Humans." CARIG Conference on Carotenoids, San Francisco, CA. Project Ref. U.001
Type: Presentation

Human Neurobehavioral Outcomes at 11 Years Following Prenatal and Postnatal Exposure to Methylmercury from a Fish Diet: A Pilot Study

Date Started: 1998

Length (years): 2

Objective: To develop a battery of neurodevelopmental measures capable of detecting subtle CNS dysfunction in children. The battery would then be given to children exposed prenatally and postnatally to methylmercury as a result of fish consumption to determine whether associations occur between exposure and testing outcomes. A battery capable of detecting subtle effects of methylmercury neurotoxicity in children is not currently available. The battery includes measures of cognitive and sensory functions adversely affected in animals and humans exposed to high dosages of MeHg. These measures have not been used before to study children whose exposure resulted from consumption of a diet high in non-contaminated ocean fish, where effects are expected to be subtle.

Researchers: Phillip W. Davidson

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Davidson, P.W., Weiss, B., Beck, C., Cory-Slechta, D.A., Orlando, M., Loiselle, D., Carter, Y. E., Sloane-Reeves, J. and Myers, G.J. (2006). "Development and Validation of a Test Battery to Assess Subtle Neurodevelopmental Differences in Children." *NeuroToxicology*. 27 (6): 951-69. Project Ref. C.013

Type: Publication

Publication: Davidson, P.W., Weiss, B., Myers, G.J., Cory-Slechta, D.A., Brockel, B.J., Young, E.C., Orlando, M., Loiselle, D., Palumbo, D., Pittelli, R. and Sloane-Reeves, J. (2000). "Evaluation of Techniques for Assessing Neurobehavioral Development in Children." *NeuroToxicology*. 21 (6): 957-72. Project Ref. C.013

Type: Publication

Acrylamide Content of Home-Prepared, Surface-Browned Foods

Date Started: N/A

Length (years): N/A

Objective: To characterize acrylamide content of home prepared/finished foods; (2) examine the impact of formulation and cooking time on acrylamide production; (3) test theoretical strategies for acrylamide reduction, and 4) identify acrylamide reduction strategies available to in-home preparers of food. Note: Found in the 03-04 Annual Report (page 12).

Researchers: Joseph Jablonski, Lauren Jackson, Helen Miller, George Sadler, Ilona Setikaite

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Sadler, G. (2005). "Acrylamide Levels and Mitigations in Home Prepared Foods." JIFSAN Research Grant Symposium, College Park, MD. Project Ref. C.015

Type: Presentation

Development of a PBPK/PD Model for Acrylamide

Date Started: N/A

Length (years): N/A

Objective: To develop using toxicokinetic and biomarker data collected in B6C3F1 mice and F344 rats a physiologically based pharmacokinetic-pharmacodynamic (PBPK/PD) model for acrylamide and glycidamide from which tissue levels of parent compound, its genotoxic metabolite, and their disposition can be simulated across species, including the human. Biomarkers of exposure including hemoglobin adducts of acrylamide and glycidamide and glycidamide-derived DNA adducts will provide a pharmacodynamic link with measures of tissue damage. The ultimate goal is to predict concentrations of acrylamide and glycidamide in human tissues along with the resultant DNA damage for use in assessing toxic risks from acrylamide in the diet. Note: Found in 03-04 Annual Report under Collaborative/Cooperative Research Projects (page 12).

Researchers: Daniel R. Doerge, David R. Lineback

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

FT-NIR Rapid Determination of Food Integrity

Date Started: N/A

Length (years): N/A

Objective: To develop a methodology for the rapid detection of contaminants (chemical and microbial) in a wide range of foods by using FT-NIR spectroscopy combined with multivariate data analysis techniques. The data obtained can lead to the development of a database to support studies on the natural variation and variation caused from different processing techniques in foods. The results of this project should provide for cost effective screening techniques that can be used by the food industry, FDA, other food safety agencies, and DOD to increase surveillance of the food supply for contaminants, including potential threat agents. The food industry would have "value added" incentives to apply this technology as part of their HACCP and quality assurance programs. Note: found in 99-00 annual report (page 37).

Researchers: Elizabeth Calvey, Fred S. Fry, Bruce Jarvis, Farukh M. Khambaty, Magdi M. Mossoba, Michael A. McLaughlin

Topics: Pathogen Detection/Characterization

Publications:

Publication: Dubois, J., Lewis, E.N., Fry, F.S. and Calvey, E.M. (2005). "Bacterial Identification by Near-Infrared Chemical Imaging of Food Specific Cards." J. Food Microbiology 22 (6): 577-583. Project Ref. C.004

Type: Publication

Publication: Rodriguez-Saona, L.E., Khambaty, F.M., Fry, F.S., Dubois, J. and Calvey, E.M. (2004). "Detection and Identification of Bacteria in a Juice Matrix with Fourier Transform-Near Infrared Spectroscopy and Multivariate Analysis." J. Food Protection, 67, 2555-2559. Project Ref. C.004

Type: Publication

Publication: Rodriguez-Saona, L.E., Khambaty, F.M., Fry, F.S. and Calvey, E.M. (2001). "Rapid Detection and Identification of Bacterial Strains by Fourier Transform Near-Infrared Spectroscopy." J. Agric. Food Chem., 49 (2): 574-579. Project Ref. C.004

Type: Publication

Publication: Rodriguez-Saona, L.E., Fry, F.S., McLaughlin, M.A. and Calvey, E.M. (2001). "Rapid Analysis of Sugars in Fruit Juices by FT-NIR Spectroscopy." Carbohydrate Research, 336: 63-74. Project Ref. C.004

Type: Publication

Publication: Rodriguez-Saona, L.E., Fry, F.S. and Calvey, E.M. (2000). "Use of Fourier Transform Near-Infrared Reflectance Spectroscopy for Rapid Quantification of Castor Bean Meal in a Selection of Flour-Based Products." J. Agric. Food Chem., 48 (11): 5169-5177. Project Ref. C.004

Type: Publication

Publication: Dubois, J., Lewis, E. N., Fry, F. S., and Calvey, E. M. (2005). "High-Throughput Identification of Bacteria - The Use of Near-Infrared Chemical Imaging (NIR-CI) for the Identification of Micro-Organisms of Concern in Food." FDA Science Forum, Washington, D.C. Project Ref. C.004

Type: Presentation

Publication: Dubois, J., Fry, F. S., Calvey, E. M., and Lewis E.N., (2004). "Near-Infrared Imaging in Food Safety." FACSS, Portland, OR. Project Ref. C.004

Type: Presentation

Publication: Dubois, J., Keys, C., Calvey, E.M. and Fry, F.S. (2004). "Rapid Bacterial Identification Using Infrared Spectroscopy: Meeting Real World Challenges Using a Dedicated Expert System." FDA Science Forum. Washington, D.C. Project Ref. C.004

Type: Presentation

Publication: Dubois, J., Lewis, E.N., Calvey, E.M., Al Khaldi, S.F., Mossoba, M.M., and Fry, F.S. (2004). "An Array-Based Approach for Bacterial Identification by Infrared Spectroscopy." Microscopy and Microanalysis, Savannah, GA. Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Fry, F.S., Khambaty, F.M. and Calvey, E.M. (2003). "Application of Aluminum Oxide Membranes for the Rapid Classification of Bacterial Strains Using Fourier Transform Near-Infrared Spectroscopy and Multivariate Analysis." FDA Science Forum. Washington, D.C. Project Ref. C.004

Type: Presentation

Publication: Calvey, E.M., Rodriguez-Saona, L.E., Fry, F.S. and Khambaty, F.M. (2002). "FT-NIR Rapid Determination of Food Integrity." JIFSAN Advisory Council Meeting. (invited). Project Ref. C.004

Type: Presentation

Publication: Calvey, E.M., Rodriguez-Saona, L.E., Fry, F.S., Khambaty, F.M. and Mossoba, M.M. (2002). "Applications of FT-NIR and FT-IR for Rapid Testing of Food Contaminants." Third Joint CSL/JIFSAN Symposium on Food Safety and Nutrition. (invited) Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Khambaty, F.M., Mossoba, M.M., Fry, F.S., Calvey, E.M. (2002). "Detection and Classification of Bacterial Strains by FT-NIR." Poster presented at the FDA Forum. Washington, DC. Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Fry, F.S., Khambaty, F.M. and Calvey, E.M. (2002). "Application of Aluminum Oxide Membranes for the Rapid Classification of Bacterial Strains Using Fourier Transform Near-Infrared Spectroscopy and Multivariate Analysis." Ann. Mtg., Inst. Food Technol., Anaheim, CA. Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Fry, F.S., Khambaty, F.M., and Calvey, E.M. (2002). "Use of Fourier-Transform Near Infrared (FT-NIR) for Differentiating Among Bacillus Species." FDA Science Forum. Washington, DC. Project Ref. C.004

Type: Presentation

Publication: Rodriguez, L.E., Khambaty, F.M., Fry, F.S., Calvey, E.M. (2001) "Discrimination of Bacterial Strains by Fourier-Transform Near-Infrared Spectroscopy Using an Aluminum Oxide Membrane." Conference on "Spectroscopic Properties of Biological Materials". Environmental and Industrial Sensing Symposium, SPIE-International Society for Optical Engineering. Newton, MA. Project Ref. C.004

Type: Presentation

Publication: Calvey, E.M. (2000). "Analysis of the Volatile Sulfur-Containing Constituents of Garlic." American Herbal Product Association, International Garlic Symposium (invited). Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Fry, F.S., Calvey, E.M. (2000). "Rapid Analysis of Sugars in Fruit Juices by FT-NIR: Comparison of Sampling Devices." Ann. Mtg., Inst. Food Technol., Dallas, TX. Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Khambaty, F.M., Fry, F.S., Calvey, E.M. (2000). "A Novel Approach for the Rapid Discrimination of Bacterial Strains by FT-NIR Spectroscopy." Conference on "Photonic Detection and Intervention Techniques for Safe Plant, Animal and Food", SPIE-International Society for Optical Engineering. Boston, MA. Project Ref. C.004

Type: Presentation

Publication: Rodriguez-Saona, L.E., Khambaty, F.M., Fry, F.S., and Calvey, E.M. (1999). "FT-NIR Rapid Determination of Food Contaminants." Eastern Analytical Symposium and Exposition. Project Ref. C.004
Type: Presentation

Mechanistic Assays for the Phototoxicity of Cosmetics

Date Started: N/A

Length (years): N/A

Objective: Development of non-animal assays that predict the risks associated with the use of cosmetic ingredients on sun-exposed skin. Note: Found in 00-01 annual report (page 53).

Researchers: Daniel Falvey, Peter Vath, Wayne Wamer

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Development and Validation of a New Technology for the Detection of E. coli O157:H7 and Other Enterohemorrhagic Serotypes

Date Started: N/A

Length (years): N/A

Objective: Development of a new, simple pathogen detection system that can be used in a variety of public health and food safety settings involving a combination of core technologies licensed by the industrial partner. Note: Found in 98-99 annual report (page 24).

Researchers: Robert Hall, Jianghong Meng

Topics: Pathogen Detection/Characterization

Publications:

Publication: Ge, B., Larkin, C., Ahn, S., Jolley, M., Nasir, M., Hall, R. and Meng, J. (2002). "Identification of Escherichia coli O157:H7 and Other Enterohemorrhagic Serotypes by Strand Displacement Amplification and Fluorescent Polarization." *Mol. Cellular Probe.* 16 (2):85-92. Project Ref. C.002
Type: Publication

Publication: Ge, B., Zhao, S., Hall, R. and Meng, J. (2002). "A PCR-ELISA for detecting Shiga toxin-producing Escherichia coli." *Microbes and Infection.* 4 :285-290. Project Ref. C.002
Type: Publication

Publication: Schroeder, C.M., Zhao, C., DebRoy, C., Torcolini, J., Zhao, S., White, D.G., Wagner, D.D., Walker, R.D. and Meng, J. (2002). "Antimicrobial Resistance of Escherichia coli O157 Isolated from Humans, Cattle, Swine, and Food." *Appl. Environ. Microbil.* 68 (2): 576-581. Project Ref. C.002
Type: Publication

Publication: Keys, C.E., Zheng, J., Zhao, S., Meng, J. and Brown, E.W. (2007). "An Enhanced Discriminatory Scheme for Subtyping Salmonella Enteritidis with Macro-restriction of DNA and Pulsed-field Gel Electrophoresis." ASM Annual Meeting, Toronto, Canada. Project Ref. C.002
Type: Presentation

Publication: Foley, S. L., Simjee, S., Meng, J., White, D.G., McDermott, P.F., Friedman, Qaiyumi, S. and Zhao, S. (2003). "Evaluation of Molecular Typing Methods for Escherichia coli O157:H7 Isolated from Cattle, Food, and Human." 7th PulseNet Annual Update Meeting, San Antonio, Texas. Project Ref. C.002
Type: Presentation

Publication: Ge, B., Larkin, C., Ahn, S., Jolley, M., Nasir, M., Hall, R. and Meng, J. (2000). "Identification of Escherichia coli O157:H7 and Other Enterohemorrhagic Serotypes by EHEC-hly A Targeting, Strand Displacement Amplification, and Fluorescent Polarization Readout." *Abstr. 100th Annu. Meet. Am. Soc. Microbiol., Los Angeles, CA.* Project Ref. C.002
Type: Presentation

Observational Study of Food Safety Practices in Retail Deli Departments

Date Started: N/A

Length (years): 2

Objective: This pilot research project on observational study in retail food environment addresses human behaviors that may lead to cross-contamination of Listeria. In order to improve the safety of ready-to-eat (RTE) food products prepared at retail deli departments, a better understanding of current practices in these establishments is needed. Food employees (n=33) in deli departments at six chain and three independent retail establishments in Maryland and Virginia (US) were observed using a notational analysis method as they prepared deli products for sale. The frequency of contact with objects and the deli products before sale; hand washing and glove changing during preparation; and equipment, utensil and surface cleaning and sanitizing was determined. Compliance with FDA's 2005 model Food Code was also assessed. Results indicated that food employees engaged in a large amount of contact between potentially contaminated objects, gloved hands, and RTE food resulting in a high number of required hand-washing actions. Compliance with these requirements was generally low and varied depending on the store type with independent stores exhibiting lower compliance than chain stores (5/273 and 73/439 required times respectively). Compliance with recommendations for the cleaning and sanitizing of food contact surfaces/utensils between uses with raw and RTE food and between uses with raw fruits and vegetables and potentially hazardous food was very high (11/11 required times). More research is needed to identify effective risk mitigation measures which would reduce the amount of contact between potentially contaminated objects, gloved hands, and RTE food.

Researchers: Elizabeth Clavey, Sherri Dennis, Jianghong Meng

Topics: Risk Communication

Publications:

Publication: Lubran, M.B., R. Pouillot, S. Bohm, E.M. Calvey, J. Meng, and S. Dennis. 2010. Observational Study of Food Safety Practices in Retail Deli Departments. J Food Prot 73:1849-1857.

Type: Publication

Characterization of Supplement and Food Components with Potential Hepatotoxicity and Food-Drug Interactions

Date Started: N/A

Length (years): N/A

Objective: To characterize the potential hepatotoxic components in the selected Hydroxycut ingredients; to examine potential interaction between dietary components and cholesterol-lowering statins. Note: Could not find in annual reports.

Researchers: Thomas J. Flynn, Liangli (Lucy) Yu

Topics: Applied Nutrition

Publications: N/A

Development and Validation of Isotope Methods for Distinguishing Between Naturally Occurring and Synthetic Phthalates in Food

Date Started: N/A

Length (years): N/A

Objective: Develop and validate analytical methods based on isotope ratio determination that can be used to distinguish between naturally occurring phthalates and "synthetic" (petroleum derived) phthalates in food. Note: could not find in annual reports.

Researchers: Alice Mignerey, John M. Ondov

Topics: Chemical Hazards, Toxins and Drug Residues

Publications: N/A

Immunoaffinity Hollow Fiber Ultrafiltration for High Throughput Screening/Residue Analysis in Food Safety

Date Started: N/A

Length (years): N/A

Objective: note: found in 98-99 annual report (page 9).

Researchers: Cheng Lee, Mary Trucksess

Topics: Microbial Hazards

Publications: N/A

Effect of a Variety of Stress Factors on the Immune Systems of Poultry and Subsequent Infection of Shell Eggs by Salmonella

Date Started: N/A

Length (years): N/A

Objective: Note: found in 98-99 annual report (page 10).

Researchers: Richard Raybourne, Wenxia Song

Topics: N/A

Publications: N/A

Mechanisms of Chemoprevention by Dietary Carotenoids and Their Metabolites in the Prevention of Chronic Disease in Humans

Date Started: N/A

Length (years): N/A

Objective: Note: found in 98-99 annual report (page 15).

Researchers: Shirley Blakely, Frederick Khachik, Andrija Kornhauser, Eugene Mazzola,

Topics: Chemical Hazards, Toxins and Drug Residues

Publications:

Publication: Sweeney, C.T.; Helzlsouer, K.J.; Khachik, F. (2000). "The Association Between Selected Carotenoids and Their Metabolites and the Risk of Developing Lung Cancer." Submitted to Cancer Epidemiology, Biomarkers, and Prevention, May 2000.

Type:

Identifying Knowledge Gaps and Improving Communication Strategies to Reduce Food Safety Risks

Date Started: N/A

Length (years): N/A

Objective: Note: found in 98-99 annual report (page 21).

Researchers: Robert Feldman, Mark A. Kantor, Alan S. Levy, Toija A. Riggins, Cynthia R. Turtle

Topics: Risk Communication

Publications: N/A

Characterization of Multiple Fluoroquinolone Resistance Among Avian Escherichia coli Isolates From North Georgia

Date Started: N/A

Length (years): N/A

Objective: Note: found in 00-01 annual report (page 10).

Researchers: Jianghong Meng, David Wagner,

Topics: N/A

Publications: N/A

Communicating with Consumers about Dietary Supplements

Date Started: N/A

Length (years): N/A

Objective: Note: found in 99-00 annual report (page 33).

Researchers: B. Derby, J. Guthrie, Alan Levy, Laura Sims

Topics: Risk Communication

Publications: N/A

Characterization of Multiple Fluoroquinolone Resistance Among Avian Escherichia coli Isolates From North Georgia

Date Started: N/A

Length (years): N/A

Objective: Note: found in the 00-01 annual report (page 10).

Researchers: Jianghong Meng, David Wagner

Topics: N/A

Publications: N/A

Bioavailability, Metabolism, and the Role of Dietary Carotenoids in Human Health

Date Started: N/A

Length (years): N/A

Objective: Note: Found in the 98-99 Annual Report under the heading "Second year funding" (page 13).

Researchers: Shirley Blakely, Frederick Khachik, Andrija Kornhauser

Topics: Applied Nutrition

Publications: N/A

Increasing the Security of the Food Supply: An Evaluation of the ALERT campaign

Date Started: N/A

Length (years): 2

Objective:

Researchers: Monique Turner, Linda Verrill

Topics: Risk Communication

Publications: N/A