~~~~~~

Center for Regulatory Research, LLC
Quarterly Newsletter
Volume 1, August 2009

~~~~~~

in this issue

Dear Susan,
Welcome to our second quarterly newsletter for 2009. Highlights of this issue are the Center for Regulatory Research, LLC recognition as an outstanding training center, USDA-FAS Cochran Fellowship Program, and current research in the areas of food safety and plant biotechnology.

C4RR recognized as an outstanding training center for 2008

~~~~~~

Center for Regulatory Research, LLC was recently recognized by the Foreign Agricultural Service, U.S. Department of Agriculture as one of seven outstanding international training centers for the Cochran Fellowship Program in 2008. The company has provided training in the areas of animal health, SPS issues, pest risk assessment, plant quarantine inspection, and food safety since the company was established in 2005.

The Cochran Fellowship Program was founded in 1984 by US Senator Thad Cochran of Mississippi, who sought to help developing nations enhance their agricultural systems and strengthen trade with the US. According to its charter in the Code of Federal Regulations:

"...Fellowships under this section shall be provided to permit the recipients to gain knowledge and skills that will - (1) assist eligible countries to develop agricultural systems necessary to meet the food and fiber needs of their domestic populations; and (2) strengthen and enhance trade linkages between eligible countries and agricultural interests in the United States. (d) Individuals who may receive fellowships. The Secretary shall utilize the expertise of United States agricultural counselors, trade officers, and commodity trade promotion groups working in participating countries to help identify program candidates for fellowships under this section from both the public and private sectors of those countries."
(From 7 USC 3293 (7 USC - U.S. Code - Title 7: Agriculture (January 2004))

The program is administered by the USDA's Foreign Agriculture Service (FAS) and has allocated up to five million dollars per country per year for training participants. The fellows are international mid- and senior-level agricultural professionals and administrators from middle-income countries or emerging democracies or markets. They receive hands-on, academic, and industry training in their field.

Current Research in Food Safety

~~~~~~

Bigwood, T., Hudson, J. A., and C. Billingtion. 2009. Influence of host and bacteriophage concentrations on the inactivation of food-borne pathogenic bacteria by two phages. FEMS Microbiology Letters. 291:59-64.

The authors examine the relationship between the food-borne pathogens *Salmonella* and *Campylobacter* and bacteriophages, which act as a biocontrol agent of the pathogens. After incubating the pathogens and phages and determining cell concentration versus inactivation rates, a quadratic polynomial equation was fitted to the inactivation rates and plotted against the host and phage concentrations. The authors determined that at low host cell concentrations pathogen inactivation was independent of host cell concentration. They conclude that biocontrol in liquid foods is practical if phage concentration is high, without prior knowledge of pathogen concentration.

Bohaychuk, V. M., Bradbury, R. W., Dimock, R., Fehr, M., Gensler, G. E., King, R. K., Rieve, R., and P. R. Barrios. 2009. A microbiological survey of selected Alberta-grown fresh produce from farmers' markets in Alberta, Canada.

Journal of Food Protection. 72:415-420.

Prior to this study, no baseline information for occurrence and levels of food-borne pathogens in fresh produce grown in Alberta, Canada existed. Researchers obtained conventionally and organically grown produce from farmers' and public markets in and around Alberta. The produce was tested for *E. coli*, *Salmonella*, *Campylobacter*, and *Cryptosporidium*, and assessed for pathogen contamination. Contamination levels varied depending on the produce type, including an 8.2% contamination rate of *E. coli* on lettuce, spinach, carrot, and green onion samples. The researchers did not find a statistically significant *E. coli* contamination difference between conventional and organic produce, although they concluded that a larger sample size would be necessary to fully substantiate the findings.

Dourou, D., Porto-Fett, A. C. S., Shoyer, B., Call, J. E., Nychas, G. E., Illg, E. K., J. B. Luchansky. 2009. Behavior of *Escherichia coli* O157: H7, *Listeria monocytogenes*, and *Salmonella Typhimurium* in teewurst, a raw spreadable sausage. International Journal of Food Microbiology 130: 245-250.

Researchers independently inoculated teewurst, a spreadable, raw sausage, with *Listeria monocytogenes*, *Salmonella Typhimurium*, and *Escherichia coli* O157:H7 and measured colony-forming units when the inoculation took place inside the batter or on commercially prepared slices. Pathogen levels decreased at all temperatures, albeit more quickly at higher temperatures. The researchers found that, in all situations, teewurst was not a favorable substrate for pathogen survival.

Presi, P., Stärk K. D. C., Stephan, R., Breidenbach, E., Frey, J., G. Regula. 2009. Risk scoring for setting priorities in a monitoring of antimicrobial resistance in meat and meat products. International Journal of Food Microbiology 130:94-100.

The authors developed a semi-quantitative human health risk assessment model to allow comparison and prioritization among different meat and meat processing types. Human health risk was defined by three factors: (i) the prevalence of contamination with anti-microbial resistant bacteria, (ii) the human health consequences of an infection with a specific bacterium resistant to a specific antimicrobial and (iii) the consumption volume of a specific product. By assessing prevalence, consequences, and consumption volume for fresh, frozen, dried raw, and heat-treated chicken, pork, beef, and veal, the authors were able to compare and quantify health risks. In the "High Risk" category, fresh and frozen chicken contributed 6.7 % overall risk, followed by fresh and dried raw pork at 4.0%. These findings can be used to direct resistance monitoring to the higher-risk categories of meat, depending on their preparation.

Current Research in Plant Biotechnology

~~~~~~

Furtado, A. Henry, R. J., A. Pellegrineschi. 2009. Analysis of promoters in transgenic barley and wheat. Plant Biotechnology Journal 7:240-253.

The authors discuss the utility of a well-defined toolbox of promoters. These would be used for modifying tissue development for molecular agriculture and plant development. The ability to utilize these promoters across major cereals would make such promoters more valuable to both science and industry. This is especially true for less homologous sequences, which would prevent homology-based gene silencing. The authors tested cross-species compatibility of wheat and barley promoters, and while some proved to be species-specific, the barley Isa and wheat Em promoters were both highly effective in directing tissue-specific transgenes in the two cereals.

Durrett, T. P., Benning, C., Ohlrogge, J. 2008. Plant triacylglycerols as feedstocks for the production of biofuels. Plant Journal 54:593-607.

In this literature review, the authors examine current research in using plant oils for fuel. Currently, highly viscous triacylglycerols (TAGs) are converted to less viscous fatty acid esters, known as biodiesel. The authors discuss methods for increasing TAG output and for directing biosynthesis to non-seed tissues from which the TAGs can be more easily extracted. Methods for direct combustion of plant oil by decreasing viscosity are also discussed.

Magana-Gomez, J. A. and A. M. Calderon de la Barca. 2009. Risk assessment of genetically modified crops for nutrition and health. Nutrition Reviews 67:1-16.

The authors present the historical background for genetically-modified (GM) health controversy and discuss the concerns, both unfounded and founded, which surround GM foods. Reviews of safety studies for two of the most prevalent GM crops, glyphosate-resistant soybeans and transgenic maize, are presented and discussed,
~~~~~~

with commentary on some of the unaddressed health concerns regarding the crops. The authors conclude that to both improve public opinion and ensure safety of GM foods, more detailed risk assessment methodologies and thorough guidelines should be developed.

Mayer, J. E., Pfeiffer, W. H., and Beyer, P. 2008. Biofortified crops to alleviate micronutrient malnutrition. Current Opinion in Plant Biology 11:166-170.

International efforts to curb micronutrient malnutrition, which were especially concerned with iron, provitamin A, zinc, and folate deficits, have had some success. However, achievements are nowhere near the levels set by global health organizations. The authors posit that one reason for the lack of success is due to the finances and infrastructure traditional intervention programs require. The authors propose that biofortification - growing staple crops with higher micronutrient concentrations through conventional or transgenic breeding, offers a solution by cutting out intermediaries and delivering the nutrition directly to the populations in need.

Quick Links...

~~~~~~

Our Website
Products and Services
Publications

Contact Information

~~~~~~

Contact:Dr. Susan Cohen, President
Phone: 612-623-8089;Email:c4rr@regresearch.com;
Web: www.regresearch.com

~~~~~~

Sign up to receive our quarterly newsletter at www.regresearch.com and receive a 10 % discount on our new print on demand service. Discount offer expires on November 1, 2009. Forward a copy of this newsletter to others so they may join the newsletter list.

Forward email
~~~~~~