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## AMI Details Industry Advancements in *Listeria* at FSIS Risk Assessment Meeting

*Listeria monocytogenes* (*Lm*) has been the catalyst for more changes in the processed meat industry than any other event in the last 30 years and the establishment of effective and attainable protection plans has been key to the industry's successful evolution to a high level of control, according to John Butts, vice president of research at Land O' Frost. Butts participated in the June 23 panel on behalf of the American Meat Institute Foundation at a public meeting announcing the launch of a government-initiated Retail *Lm* Risk Assessment.

The Food Safety and Inspection Service (FSIS) and the Food and Drug Administration (FDA) have initiated a joint interagency risk assessment that will evaluate the dynamics of *Lm* contamination in retail facilities. This risk assessment will evaluate how retail practices can affect contamination and the relative effectiveness of various retail interventions. Ready-to-eat (RTE) foods, including cheeses, deli meats and deli-type salads, will be studied as part of the risk assessment. The purpose of this public meeting was to solicit comments and input on how FSIS and FDA may conduct the risk assessment.

“ Declaring food safety ‘non competitive’ and sharing the process control ‘best practices’ were key in the industry’s successful evolution to a high level of control.”



- John Butts, vice president of research, Land O' Frost

Butts shared with the committee the lessons learned by the meat industry during the evolution of the industry's *Listeria* control efforts. These efforts can be categorized into four phases that began in the early 1990s with awareness (recognition of the environmental (see page 6)

## AMIF Releases Request for Pre-Proposals

The American Meat Institute Foundation (AMIF) has released its 2009-2010 Request for Pre-proposals.

The topics covered in this year's request are based on research priorities defined by the AMIF Research Advisory Committees, comprised of industry, academic and government officials.

AMIF is soliciting pre-proposals on controlling *Listeria monocytogenes* on ready-to-eat (RTE) meat and poultry products, *Escherichia coli* O157:H7 in fresh beef products and *Salmonella* in meat and poultry products.

AMIF is also soliciting pre-proposals for Targeted Research based on research needs and

priorities identified by AMI member companies. These topics include: validating existing and commonly used intervention technologies for *L. monocytogenes* and how they impact *Salmonella* survival in fully cooked ready-to-eat meat (RTE) meat and poultry products; developing novel interventions to reduce the likelihood of *Salmonella* contamination in products that appear ready-to-eat but are not (i.e. uncooked, breaded, boneless poultry products that also may be stuffed or filled, charmarked or artificially colored); a review paper on understanding sodium replacements from a food safety and health perspective; epidemiological data on food attribution for listeriosis, both sporadic and outbreak cases; a white paper on causes of human Methicillin-resistant *Staphylococcus aureus* (see page 8)

## CDC Releases New Report on Foodborne Illness Outbreaks

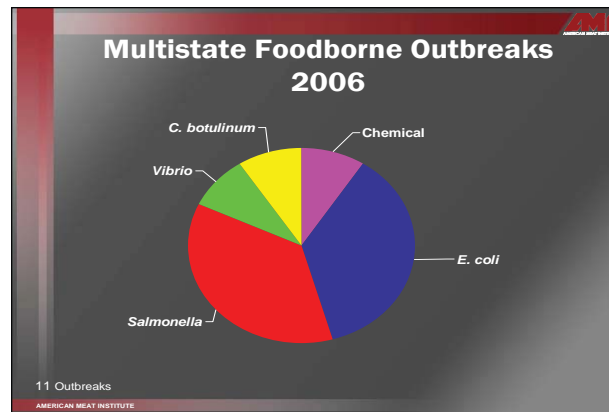
The Centers of Disease Control and Prevention (CDC) released a new surveillance report on U.S. foodborne disease outbreaks (FBDOs).

The new analysis, published in the June 12, 2009 *Morbidity and Mortality Weekly Reports*, summarizes epidemiologic data on FBDOs, defined as those involving more than one person, that were reported during 2006, the most recent year for which data have been analyzed.

The data released is different from the FoodNet data released earlier this year that tracks individual cases as opposed to outbreaks.

A total of 1,270 FBDOs were reported, resulting in 27,634 cases and 11 deaths. Among the 11 reported deaths, 10 were attributed to bacteria (six *Escherichia coli* O157:H7, two *Listeria monocytogenes*, one *Salmonella* serotype Enteritidis, and one *Clostridium botulinum*), and one was attributed to a chemical (mushroom toxin).

Among outbreaks caused by a single food vehicle, the most common food commodities to which outbreak-related cases were attributed were poultry (21 percent), leafy vegetables (17 percent), and fruits/nuts (16 percent). *Salmonella* caused 112 or 52 percent of the confirmed FBDOs attributed to bacteria. *Salmonella* serotype Enteritidis caused the most outbreaks (28 outbreaks or 13 percent). Shiga toxin-producing *E. coli* (STEC) caused 29 outbreaks or 13 percent of confirmed FBDOs



Source: CDC

attributed to bacteria. Twenty-seven of these outbreaks were serogroup O157.

Eleven multistate outbreaks, defined as outbreaks in which exposures occurred in more than one state, were detected by CDC. Ten of these were attributed to bacteria. One attributed to chemical agents was transmitted by baked goods contaminated by a floor sealant (11 cases). Four of the bacterial outbreaks were attributed to *E. coli* O157, of

which three were transmitted by leafy vegetables (395 cases) and one was transmitted by beef (44 cases). Four were attributed to *Salmonella*, of which two were transmitted by tomatoes (307 cases), one by peanut butter (715 cases), and one by fruit salad (41 cases).

Both the number of foodborne outbreaks, *Salmonella* Enteritidis (28) and *E. coli* O157:H7 outbreaks (27) in 2006 remained above their Healthy People 2010 targets of 22 and 11 outbreaks, respectively, for all modes of transmission.

The number of *Salmonella* Enteritidis outbreak-associated cases per year decreased from an average of 974 during the period 1998-2000 to 692 during the period 2004-2006 (29 percent), according to CDC data. The number of *E. coli* O157:H7 outbreak-associated cases per year decreased from an average of 829 during the period 1998-2000 to 353 during the period 2004-2006 (57 percent).

## New AMI Poll Reveals Significant Food Safety Knowledge Gaps

Significant knowledge gaps exist among the public about meat and poultry food safety, a new poll conducted by AMI has found.

The poll, which surveyed 1,000 Americans in May, found that many misconceptions remain, particularly when it comes to preparing and storing raw meat and poultry products.

Only a third (34 percent) of Americans correctly answered that a hamburger is ready to eat when the internal temperature has reached 160 degrees F. One in five said that checking the middle of the hamburger to ensure that it is brown is the best approach – a practice experts say is not an accurate indicator that a burger is thoroughly cooked. Likewise, 18 percent wrongly said that checking to see if juices run clear ensures food safety.

AMI's survey found that men were much more likely than

women to know how to identify when a hamburger is thoroughly cooked. While four in ten (41 percent) men knew that the internal temperature of a hamburger must reach 160 degrees F before it can be consumed, only 26 percent of women knew this fact.

Overall, younger Americans were less knowledgeable about proper meat preparation than older generations, the survey found. Only 16 percent of 18-29 year olds knew to check the internal temperature of a burger.

### Storage Procedures

Consumers also were uncertain about proper storage temperatures. Only 36 percent of women were aware that refrigerators should be set at 40 degree F or below. An additional one-third (33 percent) of women simply (see page 3)

# AMI: Food Safety Bill Could Set Unfavorable Precedent

A sweeping food safety bill that could dramatically affect meat and poultry producers and processors could soon be debated on the floor of the House of Representatives. The overarching goal of the bill, entitled the Food Safety Enhancement Act of 2009, is to increase FDA's food safety-related authority in light of the increased focus on recalls and foodborne illnesses attributable to FDA-regulated products.

Although the majority of AMI member companies are regulated by USDA's Food Safety and Inspection Service (FSIS), H.R. 2749 presents concerns because of the effect it would have on FDA-regulated products that are used as ingredients in some meat and poultry. The precedent the bill could establish with respect to the meat and poultry inspection statutes would affect the whole meat industry.

Specifically, AMI President and CEO J. Patrick Boyle

expressed concerns over control that the government would have over a company's HACCP program under the bill.

The proper role of government is to verify that companies have conducted a proper hazard analysis, identified the hazards that are likely to occur in their operations and develop and implement an appropriate HACCP plan to control those hazards, Boyle said.

"We do not believe it is the proper role of the government to establish the hazards and mandate preventive controls," Boyle added in a letter to Congressional leaders.

"Although sections of the bill may be viewed by some as necessary and appropriate for FDA-regulated products, those same or similar provisions, if applied to the meat and poultry inspection system, would be a step backward," (see page 4)

## AMI Poll Reveals Food Safety Knowledge Gaps

(from page 2)

admitted that they don't know the correct temperature for a refrigerator.

Only one-third (32 percent) of Americans age 18-29 knew that refrigerators should be set to 40 degrees F or below, compared to half (52 percent) of those age 30 and older.

The majority of respondents (62 percent) were also not aware that the elderly, pregnant women and people with compromised immune systems need to reheat deli meat and hot dogs to steaming before eating them.

### Public Perception

The American public was divided over whether they believe meat and poultry products are more contaminated with microorganisms, according to survey results. While 26 percent believed that today's meat/poultry has fewer bacteria, 22 percent of Americans thought that there is more bacteria on meat/poultry today than in the past. Two in ten (22 percent) didn't think bacteria levels have changed, and three in ten (29 percent) reported not knowing the answer.

In reality, government data show a record of sustained food safety improvements. Food safety strategies have also helped reduce the incidence of *Listeria monocytogenes* on ready-to-eat meat and poultry products by 74 percent since 2000 to the very low level of 0.37 percent in 2007. All of these bacteria can be destroyed by proper cooking and reheating.

For more information, visit [www.meatsafety.org](http://www.meatsafety.org).

## Nutrition News Corner

### Nitrites and Nitrates Offer Cardiovascular Health Benefits, Study Finds

Nitrite and nitrate intake can play a valuable role in reducing blood pressure for those following the well-regarded DASH diet (Dietary Approaches to Stop Hypertension), according to a new study published in the *American Journal of Clinical Nutrition*.

Michigan State University researcher Norman G. Hord collaborated with University of Texas Health Science Center researchers Yaoping Tang and Nathan Bryan in quantifying levels of nitrites and nitrates in high-nitrate or low-nitrate vegetable and fruit choices based on the DASH diet. The DASH diet forms the basis for public dietary health recommendations in the United States (e.g., MyPyramid.gov) and is widely recommended by private health agencies, such as the American Heart Association.

According to their analyses, the nitrate concentrations in these patterns – deemed healthy and even therapeutic – ranged as high as 550 percent above the World Health Organization's (WHO) acceptable daily intake for an average adult.

About 93 percent of human dietary nitrate intake comes from vegetables and saliva. Nitrate in vegetables like spinach, lettuce and beets is converted to nitrite in the mouth. Nitrite is used as a curing ingredient in meat to stabilize color and flavor and to prevent rancidity. However, cured meats contribute less than five percent of total human nitrite intake, other studies show.

The study was funded by the Michigan Agricultural Experiment Station, Michigan State University and the American Heart Association.

*American Journal of Clinical Nutrition*.2009.90:1-10

# FSIS Considering Potential Action on Not-Ready-to-Eat (NRTE) Foods that Appear Ready-to-Eat (RTE)

The Food Safety and Inspection Service (FSIS) has announced at various public and scientific meetings potential action on retail, frozen not ready-to-eat (NRTE) products that appear ready-to-eat (RTE).

At the 2009 IFT Annual Meeting in Anaheim, Calif., FSIS Deputy Administrator Dan Engeljohn, Ph.D., shared with attendees the agency's perspective on ensuring safe cooking instructions of RTE and NRTE frozen foods .

FSIS believes that certain products that appear RTE, both on the label and the actual product, but are NRTE are a public health risk to the consumer. According to FSIS, consumers are unable to properly prepare these products due to their inability to follow cooking instructions and the inherent food matrix of the product.

According to FSIS, it is the agency's responsibility to ensure the food safety of these products and has two focuses.

FSIS' primary focus is on stuffed poultry products, which it says pose the greatest risk of undercooking by the consumer, and this may pose a risk of salmonellosis. This belief is strengthened by persistent outbreaks even after shifting focus from labeling to process control.

FSIS' secondary focus is on other meat or poultry products (or such products that are depicted on labeling as RTE) considered

risky. This group includes par-fried meat and poultry that is usually breaded.

The agency is considering a number of potential actions, including validated cooking instructions and practical instructions for safe preparation by expected modes of cooking (e.g., oven, microwave) that are clear in understanding, incorporate feedback from consumers about the product and are supported by data. These instructions would also be verified by FSIS Enforcement, Investigation and Analysis Officers (EIAOs) in the food safety assessment (FSA) process.

Other potential actions include a planned enforcement strategy to meet HACCP expectations. For those producing products of primary focus, potential actions include the establishment of a non-detectable standard for *Salmonella* in finished product (e.g., addressing poultry, flour, vegetable, spice, and other ingredients) and full implementation of a verification testing program by FSIS in CY2010. For those producing products of secondary focus, potential actions include a post-chill/post-fabrication reduction for *Salmonella* in the meat or poultry ingredient and full implementation of a verification program by FSIS in CY2010.

FSIS is considering consumer-focused actions as well. These actions include improving labeling awareness and providing safe cooking guidance.

## FSIS Data Shows *Listeria* Decline in RTE Foods

*Listeria* prevalence in ready-to-eat (RTE) foods declined from .48 to .39 percent positive in 2008, according to new data released by the Food Safety Inspection Service (FSIS).

This data was taken from RTE001 samples, which were requested from a list of establishments with the highest risk ranking for *L. monocytogenes*. This ranking is based on a number of factors including the RTE Alternative(s) used by the establishment, the volume of production for post-lethality exposed products, and the sample results from previous testing for *L. monocytogenes*.

When examining overall trends in regulatory findings, there has been a continuing and consistent decline in the percentage of positive samples in the projects where FSIS analyzes RTE meat and poultry products for *L. monocytogenes* – a 69 percent reduction since 2000.

For more information, go to [www.fsis.gov](http://www.fsis.gov).

## AMI Expresses Concerns About Food Safety Bill

(from page 3)

Boyle said. "To this end, AMI is troubled by the potential precedents the bill could set for products regulated by the USDA."

Boyle also expressed concern over the 'full pedigree' traceability required by the bill; the empowerment of FDA to mandate a recall and impose civil penalties and to regulate carbon monoxide as a color additive; and the changes the bill would make to policies with respect to how FDA determines whether a substance is generally recognized as safe and the imposition of a user fee that would be paid by the regulated industry for food safety services.

AMI has worked successfully to ensure that key food safety provisions, such as those concerning the establishment of preventive controls and traceability have been improved, but still has concerns with the provisions that provide FDA with mandatory recall authority, the imposition of registration fees and a reference to Bisphenol A in the legislation, among others.

## AMI President Receives AMSA Special Recognition Award

AMI's President and CEO J. Patrick Boyle received the American Meat Science Association's (AMSA) Special Recognition Award. The award was established to honor individuals for truly significant, exceptional and lasting service to either the AMSA or the meat industry. Boyle received the award during the AMSA awards program at the 62nd Annual Reciprocal Meat Conference, held this year in Rogers, Ark.

Steve Campano, executive vice president of Trumark, a division of Hawkins, Inc., who also served as AMSA president,

explained that the award is not an annual award, but rather is presented for exceptional service as recognized and endorsed by the AMSA board of directors.

"This year, J. Patrick Boyle of the American Meat Institute is recognized for his dedicated service to the meat industry, for his staunch support of its members and for his daily efforts to improve conditions and resolve issues critical to the health of the industry and its workers," Campano said.

## International Meat Secretariat Examines Industry Issues

The issues of sustainability, diet and health, the environment and animal welfare were the topics of focus for the "Marketing and Communications Workshop" of the International Meat Secretariat (IMS), May 17-19, 2009, in Chicago. Attending the conference were 65 representatives from 14 countries across the globe, including AMI Foundation's Andrew Milkowski.

John Huston, retired executive vice-president of the National Cattlemen's Beef Association served as the session moderator. The objectives of the session were to exchange information, develop positive and effective communication ideas to discuss positive nutritional and product benefits to consumers and to encourage consumer demand across the globe.

During two full days of joint meetings, the Marketing and Nutrition committees discussed the February 2009 World Cancer Research Fund nutritional policy recommendations and a March 2009 National Cancer Institute paper which raised questions about the health and social issues related to meat consumption which thrust the meat industry into the public spotlight.

During the week's IMS Human Nutrition and Health Committee meeting, Milkowski, who is a member of the committee, presented a summary of the December 2008 International Life Sciences Institute meeting entitled "Decision Making for Recommendations and Communications Based on the Totality of Food-Related Research." This workshop was initiated and funded by AMIF and provided context on interpreting epidemiology for the development of public policy. Milkowski shared both highlights from the meeting and his observations.

IMS continues to foster cooperation of the various technical and nutrition experts across the globe and help to address the various controversies and misconceptions about meat consumption and health. The AMI Foundation supports the activities of IMS and currently hosts a Web repository of diet and health literature concerning meat products and consumption. This interactive Web platform allows IMS Committee members to post new articles and comments about the global issues facing the meat industry. It has been a highly effective tool in disseminating information and coordinating responses to media inquiries worldwide.

## Canada Issues Analysis on Improving Food Safety

A comprehensive analysis by the Canadian Parliament's Food Safety Subcommittee following last summer's listeriosis outbreak contains more than a dozen areas for improvement, including the implementation of food safety programs such as Hazard Analysis and Critical Control Point (HACCP), traceability, a collaborative effort with the U.S. to develop a common approach to food safety standards, an enhanced foodborne illness surveillance system, better inter-agency protocols and increased inspection resources.

The report, entitled "Beyond the Listeriosis Crisis: Strengthening the Food Safety System," was compiled after a series of public hearings between April and June 2009 on a number of issues related to food safety.

The hearings included testimony from various members of the Canadian government, producers, processors and other members of Canada's food supply chain, as well as testimony from James Hodges, executive vice president of the American Meat Institute and interim president of the American Meat Institute Foundation.

Hodges told members of the committee that ultimately, the responsibility for producing safe food rests with the manufacturer. "The government, whether it be in the United States or Canada, does not manufacture food," he said. "They have a very important role in the oversight of setting appropriate standards to protect the public health and they have to have vigorous oversight to ensure that those standards are met."

Hodges pointed out that the meat and poultry industry has been a strong advocate of a preventative approach and in fact petitioned the United States Department of Agriculture (USDA) to mandate HACCP plans in meat and poultry plants. That requirement took effect a decade ago and has helped enhance meat and poultry safety.

The report, which cites AMI at several points, notes that if the 14 changes are fully implemented, the Subcommittee "believes these recommendations will improve the Canadian food safety system and mitigate future tragedies."

## AMIF Study Analyzes Effect of Brining Agents on *E.coli* O157:H7

A new AMI Foundation-funded study analyzing the effect of individual ingredients or combinations of ingredients used for brine enhancement on destruction of *E. coli* O157:H7 has found many effective ways to reduce *E. coli* during the processing of meat products.

This study evaluated the effect of individual ingredients or combinations of ingredients used for brining (traditional and novel) on destruction of *E. coli* O157:H7, in a meat model system and a beef extract, during storage and simulated (in a water bath) cooking; survival/growth of the pathogen during frozen, refrigerated, or retail-type storage of moisture-enhanced beef steaks and roasts and subsequent destruction during cooking by pan-broiling, double pan-broiling and/or roasting; and survival of *E. coli* O157:H7 during storage of freshly prepared and recirculated brine solutions containing one or more antimicrobial ingredients.

The study found that moisture enhancement of beef products with a brine formulation that contained an antimicrobial reduced *E. coli* O157:H7 contamination during product storage. The study also found that essential oils, thyme oil and grapefruit seed extract, alone or in combination with other antimicrobials, caused immediate inactivation of *E. coli* O157:H7 in a beef extract that contained the common brine ingredients, salt and phosphate.

The destruction of *E. coli* during cooking was also studied. The destruction of internalized *E. coli* O157:H7 in moisture-enhanced products was dependent on the cooking method (i.e., pan-broiling, double pan-broiling, or roasting) used; more destruction of the pathogen was obtained in thicker (4.0 cm)

than thinner steaks (1.5 or 2.5 cm). It was also found that the contamination of freshly prepared or recirculated brines can be controlled with the addition of antimicrobials to the solutions, such as AvGard® XP (2.2 percent) or cetylpyridinium chloride (5.5 percent).

Moisture enhancement of beef products is one alternative used by the meat industry to improve tenderness and flavor of lower valued cuts, and involves multi-needle injection of a brine solution. These brine solutions are traditionally comprised of salt, one or more of the sodium phosphates, and water, which are injected into the meat product.

A microbiological safety concern associated with this enhancement process is potential contamination of the interior parts of the products with pathogens, such as *Escherichia coli* O157:H7, either through transfer of the pathogen from the contaminated meat surface to the interior during needle injection, or from the use of brines that have become contaminated.

Subsequent undercooking (due to consumer preference, or accidentally) may result in survival of the internalized pathogen, and possibly lead to human illness. Also, there are concerns that brine ingredients may make the pathogen more difficult to kill during cooking.

The findings of this study should be useful for development and/or improvement of brines for enhancing the safety of moisture-enhanced meat products.

This study is available in its entirety at [www.amif.org](http://www.amif.org).

## AMI Details Advancements Against *Listeria* at FSIS Meeting

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nature of *Listeria*), followed by enlightenment (recognized existence of growth niches and beginning of redesign phase), preventative (mapping of growth niches, establishment of intervention practices) and predictive (aggressive early warning sampling and intervention practices in place).

Butts also detailed the impact of the AMI Board vote in 1999 to make food safety a non-competitive issue and encouraged collaborative problem-solving among members of the industry.

“Declaring food safety ‘non competitive’ and sharing the process control ‘best practices’ were key in the industry’s successful evolution to a high level of control,” Butts told those attending the roundtable discussion.

Since 2000, the prevalence of *Lm* in RTE products has been reduced by 74 percent to less than 0.4 percent, Butts said. Butts also noted that since 2003 there have been no USDA-inspected plants linked to a *Listeria* illness outbreak.

As the scope of control evolves, there are some pitfalls to avoid, including punishment—either regulatory or corporate—for finding a problem, Butts said. Butts also expressed his opposition to prescriptive government programs.

“Given room for discovery and continuous improvement, like habit-forming, change will be slow and gradual,” Butts said.

Butts also warned that there are some missing gaps between data from the meat processors to public health illnesses that should be considered when moving forward. Prevalence of *Listeria* in meat and poultry products has continued to decline while incidence of human illness has remained unchanged.

“AMI and the processed meats industry remain committed to solving the food safety problems associated with our products from the farm to the fork,” Butts concluded.

The agenda and copies of the presentation can be viewed [www.fsis.gov](http://www.fsis.gov), under News and Events.

## Science Soundbites

### Sanitizers Most Effective Against Younger *Listeria monocytogenes* Biofilms on Smooth Surfaces

Sanitizer efficacies are greater against younger *L. monocytogenes* biofilms and on smooth surfaces, according to a new study by Colorado State University and Ohio State University that compares the effectiveness of 10 commercially available sanitizers against biofilms on high-density cutting boards.

Smooth and rough surface high-density polyethylene coupons (surface samples) were inoculated with a five strain composite of *L. monocytogenes* in a ham homogenate and incubated at 24 degrees C. and greater than 90 percent humidity for up to 21 days. The coupons were subjected to repeated 24-hour cycles simulating use and cleaning in the home. Each day, 0.3 mL of a 10-fold diluted tryptic soy broth containing 0.6 percent yeast extract was added to each coupon simulating exposure to nutrients during food preparations. Eight hours later, each coupon was rinsed with sterile distilled water.

Coupons were subjected to sanitizer treatments on days 0, 0.25, 7, 14 and 21. Eight quaternary ammonium compound (QAC)-based sanitizers, one of lactic acid-based sanitizer and one sodium hypochlorite-based sanitizer were applied to individual coupons according to manufacturers' instructions. Coupons were analyzed for *L. monocytogenes* (PALCAM agar) and total bacteria (tryptic soy agar with .6 percent yeast extract). At 0 and 0.25 days, nine of the sanitizers (all except for the QAC-based sanitizer 10) had reduced *L. monocytogenes* to less than 0.60 log CFU/cm<sup>2</sup>. For greater than 7-day biofilms, the lactic acid-based sanitizer (pH 3.03) was the most effective, and the QAC-based sanitizers were more effective when at pH 10.42 and 11.46 than at pH 6.24 to 8.70. Sanitizer efficacies were greater against younger than older biofilms on smooth surfaces. For 7- and 14-day biofilms, sanitizer efficacies were higher on smooth

than on rough surfaces.

*Journal of Food Protection*.2009.72(5):990-998

### *E. coli* O157:H7 Vaccine Containing SRP Proteins May Be Useful Preharvest Intervention Strategy

An *E. coli* O157:H7 vaccine containing outer membrane siderophore receptor and porin (SRP) proteins may be a useful preharvest intervention strategy, according to a new study by Kansas State University and West Texas A&M University.

The efficacy of the vaccine in reducing fecal prevalence and shedding of *E. coli* O157:H7 was evaluated in cattle inoculated with *E. coli* O157:H7. Thirty calves were randomly assigned to one of two groups, and on days one and 21 these calves were given subcutaneous injections of either a placebo or the vaccine. Blood was collected weekly to monitor the serum anti-SRP antibody tiers. Two weeks after the second vaccination, calves were orally inoculated with a mixture of five strains of nalidixic acid-resistant *E. coli* O157:H7. Fecal samples and rectoanal mucosal swabs were collected daily for the first five days and then three times each week for the following four weeks to determine the presence and enumerate the fecal concentration of the nalidixic acid-resistant strains.

At necropsy on day 35, gut contents and tissue swabs were collected to determine the presence and concentration of nalidixic acid-resistant *E. coli* O157:H7.

Vaccinated cattle had significantly higher anti-SRP antibodies than did control cattle and vaccination of cattle with SRP protein tended to decrease fecal concentration of nalidixic acid-resistant *E. coli* O157:H7. The number of calves that were fecal culture positives for *E. coli* O157:H7 was also lower than in the control group.

Researchers recommend future research be conducted on natural prevalence in feedlot operations to further evaluate the efficacy of this novel vaccine.

*Journal of Food Protection*.2009.72(4):866-869

### Smaller Beef Processors Face Same Pathogen Challenges as Large Processors

Smaller beef processors face and address the same challenges as larger beef processors, says a new study by the USDA that addresses the lack of data on the prevalence and levels of *E. coli* O157:H7 and *Salmonella* in small beef processing plants.

Researchers examined hides and carcasses of cattle at seven small processing plants located across the United States for *E. coli* O157:H7 and *Salmonella*. Across all plants, hide prevalence of *E. coli* O157:H7 and *Salmonella* was 71 and 91 percent, respectively. Twelve percent of hides had *E. coli* O157:H7 at enumerable levels, while 36 percent of hides had *Salmonella* at enumerable levels. Across all plants, the prevalence of *E. coli* O157:H7 on pre-evisceration carcasses was 33 percent, with 2 percent at an enumerable level. Across all plants, *Salmonella* prevalence on pre-evisceration carcasses was 58 percent with eight percent at an enumerable level.

Significant plant-to-plant variations in levels and prevalence of pathogens on carcasses were detected. Reduced levels of pathogens on carcasses were noted among small processors that had incorporated a hide-directed intervention.

The results obtained were comparable to those observed previously for larger processors.

*Journal of Food Protection*.2009.72(6):1272-1278

# AMI Foundation Accepting Requests for Pre-proposals

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risk associated with animal sources; and a white paper addressing the nutritional benefits of meat.

Proposals should be submitted to AMIF's Director of Research Susan Backus at [sbackus@meatami.com](mailto:sbackus@meatami.com) and [sbackus@gmail.com](mailto:sbackus@gmail.com) by 5 p.m. EDT on Monday, August 3, 2009.

Pre-proposals must be submitted to both e-mail addresses above.

Pre-proposals submitted after this date and time will not be accepted.

To view the full request, go to [www.amif.org](http://www.amif.org).

## AMIF Ongoing Research

### Ongoing AMIF Research – *E. coli* O157:H7

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Ellin Doyle, Charles Kaspar	University of Wisconsin	White Paper on Non-O157:H7 Shiga-toxin producing <i>E. coli</i> from Meat and Non-Meat Sources (Targeted Research)

### Ongoing AMIF Research – *Listeria monocytogenes*

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Mary Alice Smith, Joseph Frank	University of Georgia	Refinement of <i>Listeria monocytogenes</i> ( <i>L. monocytogenes</i> ) Low Dose Data from Pregnant Guinea Pigs for Human Risk Assessment
Charles Carpenter, Jeffrey Broadbent	Utah State University	Validation of Levulinic Acid for Topical Decontamination of Meat Surfaces
Kathy Glass, Jeff Sindelar	University of Wisconsin	Evaluation of anti-Listerial Properties of Natural and/or Organic Ingredients in Ready-to-Eat Meat and Poultry Products
Phil Crandall, John Marcy, Steve Ricke, Mike Johnson, Corliss O'Bryan, Betty Martin	University of Arkansas	Minimizing <i>Listeria</i> Cross Contamination of Ready-to-Eat Poultry Meats by the In-Store Deli Meat Slicer
Phil Crandall, John Marcy, Steve Ricke, Mike Johnson, Betty Martin, Corliss O'Bryan, Sara Rose Milillo	University of Arkansas	Cost Effective Treatments to Minimize In-Store Deli Meat Slicer Cross Contamination of Ready-To-Eat Meats by <i>Listeria monocytogenes</i> , Phase II
Sophia Kathariou, Dana Hanson	North Carolina State University	Genetic Attributes Associated with the Ability of Different Serotypes of <i>Listeria monocytogenes</i> to Colonize the Meat Processing Plant Environment and to Contaminate Read-to-Eat Meat Products (Chicken, Turkey, Pork and Beef)
Richard Meinersmann, Mark Berrang, Tim Hollibaugh, Joseph Frank	Agricultural Research Service, USDA, University of Georgia	Role of Protozoa in the Persistence of <i>Listeria monocytogenes</i> in a Ready-to-Eat Poultry Processing Plant



## AMIF Ongoing Research

### Ongoing AMIF Research – Salmonella

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Annette O'Connor <sup>1</sup>	Iowa State University	A Systematic Review of Literature on Pork Chain Epidemiology
Randall Phebus, Douglas Powell, Harshavardhan Thippareddi	Kansas State University, University of Nebraska	Beyond Intent: Assessment and Validation of On-package Handling and Cooking Instructions for Uncooked, Breaded Meat and Poultry Products to Promote Consumer Practices that Reduce Foodborne Illness Risks (Targeted Research)
Annette O'Connor	Iowa State University	A Workshop to Develop Reporting Guidelines for Interventions Studies in Food Safety and Production Animal Science: Modifying the CONSORT Statement
Michael Doyle, Tong Zhao	University of Georgia	Reduction of <i>E. coli</i> O157:H7 and <i>Salmonella</i> in Ground Beef
Margaret Hardin, Jayne Stratton, Marcos Sanchez-Plata	Texas A&M University, University of Nebraska- Lincoln, Inter-American Institute for the Cooperation in Agriculture	Evaluation and Performance of the Premi-Test™ <i>Salmonella</i> Serotyping System on Pork and Poultry Isolates from Commercial Sources

<sup>1</sup> Co-funded with the National Pork Board

### Ongoing AMIF Research – Other Food Safety

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Randy Wehling, Michael Zeece, Harshavardhan Thippareddi	University of Nebraska	Evaluation and Analysis of Meat Products Contaminated by Low Levels of Ammonia (Targeted Research)
Ellin Doyle, Kathy Kurth, Andrew Milkowski	University of Wisconsin	White Paper on Effectiveness of Existing Interventions on Virus Inactivation in Meat and Poultry Products (Targeted Research)

### Ongoing AMIF Research – Diet and Health

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
J. Scott Smith, Terry Houser, Melvin Hunt <sup>2</sup>	Kansas State University	Analysis of Heterocyclic Amines (HCAs) Formation in Various Cooked Meat Products (Targeted Research)
Arthur Miller, Leila Barraj, Nga Tran, Terry Troxell <sup>2</sup>	Exponent, Inc.	Assessment of the Potential Human Exposure to Heterocyclic Amines from Various Cooked Meat Products (Targeted Research)

### Ongoing AMIF Research – Sodium Nitrite

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Jimmy Keeton, Wes Osburn, Margaret Hardin <sup>2</sup>	Texas A&M University	A National Survey of the Nitrite/ Nitrate Concentrations in Cured Meat Products and Non-meat Foods Available at Retail (Targeted Research)

<sup>2</sup> Co-funded with the National Pork Board

# Worldwide Food Expo to Feature MIRC and Food Safety Sessions

Food safety will again have a prominent role at The Worldwide Food Expo, to be held Oct. 28-31, 2009, in Chicago.

The Meat Industry Research Conference (MIRC) will again precede the Expo this year on Oct. 27. MIRC has developed a reputation for presenting cutting-edge science in practical, applied ways.

This year, MIRC will emphasize the impact of drastic changes in the new economic reality on technical and research demands of the industry.

Conference topics will include new research and development, emerging issues that reduce pathogens and improve food safety, technical and research efforts and alternatives to phosphates, reformulation and more.

In addition to MIRC, the Expo will feature a food safety education track. These three in-depth discussions on industry best practices, implementing appropriate interventions and compliance with regulatory requirements will include extensive time for participants to ask questions and solve problems in their own operations. This track also features a free Saturday session, a \$700 value.

The scheduled sessions are as follows:

**Ensuring Food Safety** (Oct. 28, 9-10 a.m.): Participants will learn more about food safety and its impact on their businesses, including the impact of regulations, the correlation between sanitation and profitability and how all members of the supply chain can collaborate to ensure optimal safety.

**Plant Operations Short Course: Food Safety for the Meat Industry** (Oct. 29, 8:15-11:30 a.m.): This session will focus on the proposed FSIS Public Health Information System (PHIS) program, including analytics and inspection methods, and will discuss how the program may affect business.

**Free Food Safety Short Course: *Listeria* Intervention and Control** (Oct. 31, 7-11:30 a.m.): This course, taught by operations and safety experts from the field and noted industry scientists, will explore industry best practices, implementing appropriate and effective microbial interventions and compliance with regulatory requirements.

For more information on these programs and to register for the MIRC Conference and/or Expo, go to [www.worldwidefood.com](http://www.worldwidefood.com).

## Upcoming Events

October 28 - 31, 2009  
2009 AMI International Meat, Poultry & Seafood Industry Convention and Exposition  
McCormick Place, Chicago, Ill.

February 3 - 4, 2010  
Advanced *Listeria monocytogenes* Intervention and Control Workshop

March 25 - 26, 2010  
Animal Care & Handling Conference

April 29 - 30, 2010  
Conference on Worker Safety, Human Resources, and the Environment

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