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AMIF Approves Funding for 2008 Projects

The AMIF Board of Directors approved seven projects for funding. These approvals are based on recommendations from the Research Advisory Committee and represent nearly half a million dollars in research funding. Projects awarded with funding demonstrate a potential for commercial applicability to the processing plant and ability to improve food safety in the meat and poultry industry. Projects include:

1. Evaluation of anti-Listerial Properties of Natural and/or Organic Ingredients in Ready-to-Eat Meat and Poultry Products

Kathy Glass, Jeffrey Sindelar, University of Wisconsin

The objective of this project is to identify ingredients to suppress growth of *Listeria monocytogenes* in ready-to-eat (RTE), deli-style, meat and poultry products that meet "natural" or organic requirements defined by USDA. This project is relevant to the AMIF Research Priorities by identifying the combination of ingredients required to suppress growth of *Lm* in "natural," ready-to-eat meat and poultry products, thereby enhancing product safety and preventing additional outbreaks and recalls. Data collected

for this study can be used by the industry to expand development of safe RTE meat and poultry formulations.

The study will be conducted in two phases. Phase 1 will screen for effective levels of commercial extracts, flavorings, and microbial fermentation byproducts in cooked uncured turkey breast slurries (25 percent meat) and in slurries prepared with vegetable powder and a nitrate-reducing starter culture to yield nitrite. Slurries will be inoculated with 3-log CFU/g *L. monocytogenes* and stored at 4°C for 4 weeks. A minimum of 40 treatments will be developed to assess the antilisterial impact the tested ingredients have either individually or in combination. Sensory studies will be conducted on the effective ingredients and/or combinations. Phase 2 will evaluate two natural antimicrobial systems for each of three low-fat (<5% fat) RTE products: natural boneless ham, whole muscle roast beef, and deli-style turkey breast.

2. Minimizing *Listeria* Cross Contamination of Ready-to-Eat Meat and Poultry by the In-Store Deli Meat Slicer

Phil Crandall, John Marcy, Steve (see page 2)

CDC Data Shows Little Change in Incidence of Infections

A 10-state report released recently by the Centers for Disease Control and Prevention (CDC) shows little change in the incidence of some foodborne infections after a period of decline.

The findings are from 2007 data reported to the CDC as part of the agency's Foodborne Diseases Active Surveillance Network, FoodNet.

Campylobacter, *Listeria*, *Salmonella*, *Shigella*, *E. coli* O157, *Vibrio*, and *Yersinia* did not decline significantly, and the estimated incidence of *Cryptosporidium* increased when compared with the previous three years (2004-2006). Although there have been significant declines in the incidence of some foodborne infections since

surveillance began in 1996, these declines all occurred before 2004.

The full report, "Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – 10 States, United States, 2007" appears in the *Morbidity and Mortality Weekly Report* (April 11, 2008) and is available online at www.cdc.gov/mmwr.

To learn more about FoodNet, please visit www.cdc.gov/foodnet/.

For more information about foodborne infections, visit www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfections_g.htm.

AMI Foundation Approves Seven Projects for Funding

(from page 1)

Ricke, Mike Johnson, Corliss O'Bryan, Betty Martin, University of Arkansas

The following objectives have been established for this research:

1. Develop a visual verification system to insure that food contact surfaces are "clean to sight and touch." It is absolutely essential that deli slicer surfaces are clean before proceeding to sanitize them.
2. Measure the effectiveness of current deli operators' recommended cleaning and sanitation practices in removing *Listeria* and *Listeria* biofilms to determine the cost effectiveness and time efficiency of improved cleaning methods that could permit the use of meat slicers for longer time intervals beyond the recommended four hours.
3. Assess the effectiveness of "hot boxes" to sanitize clean slicers overnight for complete destruction of *Listeria* in biofilms on food contact surfaces.
4. In cooperation with commercial deli managers, draft "Best Practices" and test under commercial conditions for cleaning and giving deli meat slicers a lethal heating step. We will circulate the draft best practices to receive feedback from deli operators. An experienced team of food safety investigators at the University of Arkansas (UA) in cooperation with the management of two major retail deli operations and a food chemical sanitizer company will conduct these experiments. Findings from the literature will be leveraged with the support from our commercial suppliers to evaluate the current cleaning and sanitizing practices of deli meat slicers. These practices will be compared for ease of cleaning and retention of harborage for the formation of *Listeria* biofilms.

3. Effect of Traditional and Modified Enhancement Solution Ingredients on Survival of *Escherichia coli* O157:H7 during Storage and Cooking of Moisture-enhanced Beef

Ifigenia Geornaras, John Sofos, Colorado State University

The overall goal of the proposed studies

is to identify ingredients used in brining solutions that may have antimicrobial effects during storage and/or enhance thermal inactivation of *Escherichia coli* O157:H7 during cooking of moisture-enhanced beef products.

In the first study, ingredients will be screened for their effect on the thermotolerance of *E. coli* O157:H7 in model systems comprised of laboratory media or ground beef. The ingredients will initially be tested individually, and then in combinations of two or three, in the inoculated (approximately 7 log CFU/ml or /g using a 5-strain *E. coli* O157:H7 composite) model system, in a circulating water bath.

Results of Study I will indicate which of the brining ingredients (alone or in combination) enhance heat inactivation of *E. coli* O157:H7. Inoculated (5-strain *E. coli* O157:H7 composite; 7 log CFU/g) nonintact beef samples will be prepared with these ingredients and subsequently packaged and stored under simulated frozen (-20°C), refrigerated (4°C), and retail-abusive (12°C) conditions in vacuum and/or air-permeable packages. At predetermined storage intervals, samples will be microbiologically analyzed to determine possible antimicrobial effects of the brining ingredients during storage. Furthermore, stored samples will be subjected to three cooking methods (i.e., broiling, frying, and grilling) to two target endpoint temperatures (60 and 65°C), as previously conducted by Mukherjee et al.

4. White Paper on Human Illness Caused by *Salmonella* from All Food and Non-Food Vectors

Charles Kaspar, M. Ellin Doyle, John Archer, University of Wisconsin

The goals for this research are:

1. Summarize all historical and epidemiological data on the relationships between food and non-food vehicles and vectors, and human illnesses caused by *Salmonella*.
2. Develop an historical timeline outlining

major events related to *Salmonella* emergence, epidemiology, surveillance, regulation, and industry initiatives to control *Salmonella*.

3. Describe surveillance strategies, regulations, and industry initiatives to control this pathogen.
4. Analyze effectiveness and limitations of current epidemiological data collection strategies for food attribution data.
5. Identify gaps in understanding illness caused by *Salmonella* and propose research and possible procedural changes for epidemiological studies in order to close these gaps.

Scientific literature databases (Web of Science, PubMed, Food Science and Technology Abstracts), U.S. government publications from CDC, FDA, and USDA, relevant government publications/regulations from Canada, the European Union, Australia, and other countries, and industry publications will be searched for information on outbreaks and human illness attributed to *Salmonella* spp. until one month prior to submitting the finished document.

5. Analysis of Heterocyclic Amines (HCAs) Formation in Various Cooked Meat Products

J. Scott Smith, Terry Houser, Melvin Hunt, Kansas State University

The goal of this research is to evaluate processing procedures and ingredients that may influence the levels of HCA formation in the major muscle food categories. Initial activity will involve evaluating cooking procedures and ingredients on the levels of formation of HCAs that are not currently covered in the research literature. Where appropriate, experiments will be performed using standard cooking/frying procedures developed in the Kansas State University laboratories. Emphasis will be on recently developed processes such as antioxidants containing marinades and enhancements with various ingredients (such as phosphates, salt, etc). Prior to initiation of this research a roundtable discussion will be held to establish specific priorities. (see page 3)

Randy Huffman, Ph.D., Named New President of AMI Foundation

AMI announced recently that Randy Huffman, Ph.D., has been named AMI Foundation president. Huffman replaces Jim Hodges, who has been named executive vice president of the Institute after serving as AMI Foundation president since 1999.

In his new capacity, Huffman is responsible for the day-to-day activities of the Foundation, including its research initiatives, industry best practices development and educational programming.

Huffman joined AMI in 2000 as vice president of scientific affairs. Prior to joining

the AMI Foundation, Huffman was director of technical services at Koch Industries, Inc., in Wichita, Kansas, where he managed food safety and product development issues at Koch Beef Company. Earlier in his career, he served as vice president of Technical Services at Fairbank Farms a fresh meat processing firm based in Ashville, N.Y.

Huffman received a B.S. in animal science from Auburn University in Auburn, Ala.; and an M.S. and Ph.D. in animal sciences, with specialization in meat science from the University of Florida, in Gainesville, Fla.



Randy Huffman, Ph.D.
President, AMI Foundation

American Meat Institute Foundation Awards Funding to Seven Projects

(from page 2)

6. Assessment of the Potential Human Exposure to Heterocyclic Amines from Various Cooked Meat Products

Arthur Miller, Leila Barraj, Nga Tran, Terry Troxell, Exponent, Inc.

The objectives of this research are to review the major categories of fresh and processed meat products that are candidates for heterocyclic amine formation during handling, preparation and cooking and determine the impact of processing procedures, added ingredients, packaging and cooking methods, and other factors known to affect HA formation; develop a matrix to compare the likelihood and level of HA formation among the major meat categories based on common handling, processing and cooking practices, and to conduct an exposure assessment to establish the likelihood of HA formation during normal processing and handling, and the likelihood and degree of human exposure based upon known dietary consumption patterns of major meat categories.

The project will be carried out in three phases: 1) literature review and data compilation, 2) consumer cooking behavior survey, and 3) dietary exposure assessment. In phase 1, data on HAs formation and reduction based on different methods of cooking/processing will be compiled. In phase 2, an Internet survey will be conducted to ascertain the prevalence of various meat cooking methods that are preferred (and hence

commonly practiced) among U.S. meat consumers. In phase 3 of the study, data from phase 1 and 2 will be combined with recent food consumption survey data, such as NHANES 2003-2004 data, to derive realistic long term (usual) exposure to HAs from meat consumption.

7. A National Survey of the Nitrite/Nitrate Concentrations in Cured Meat Products and Non-Meat Foods Available at Retail

Jimmy Keeton, Wes Osburn, Margaret Hardin, Texas A&M University

The objectives of this study are to:

1. Analyze representative samples of the major categories of cured meat products for residual nitrite/nitrate selected from retail outlets and supermarket chains in targeted geographic regions of the United States (New York City, Raleigh, NC, Chicago, IL, Dallas, TX, and Los Angeles, CA).
2. Compare the nitrite/nitrate concentrations of the surveyed products with those of previously established baselines to estimate the present-day level of dietary nitrite/nitrate exposure from cured meat sources.
3. Analyze representative samples of highly consumed raw vegetables for nitrate/nitrite content that are taken from the outlets listed in Objective 1, and determine the

concentrations of nitrite/nitrate contributed to the diet by these foods.

4. Compare the concentrations of nitrite/nitrate found in the raw vegetables to those of previously established databases, and estimate the current total level of nitrite/nitrate exposure from cured meat and non-meat food items.
5. Compile a database of nitrite/nitrate concentrations in potable water from 20 cities located in different geographic regions of the U.S. by securing water quality analyses for nitrite/nitrate from the EPA databank, public health departments and/or water department municipalities.

Texas A&M will conduct a national survey of the major categories of cured meat products for their nitrite/nitrate content by randomly selecting samples from retail outlets located in five geographically diverse metropolitan areas. Texas A&M will simultaneously collect and perform nitrate/nitrite analysis on samples from five categories of highly consumed raw vegetables. These data will then be used to establish a current database. A companion survey will be performed to acquire the nitrite/nitrate concentrations of potable water supplies from 20 different cities across the U.S. by securing this information from the EPA databank or public municipalities. This study will document the actual contributions of cured meat, raw vegetables and water to the daily dietary nitrite/nitrate load of consumers.

AMI Foundation Hosts Well-Attended *E. coli* Briefing Meeting Brings Together Leading Experts to Discuss State of Science

The American Meat Institute Foundation (AMIF) and the National Meat Association hosted a briefing in Washington, D.C., to confront the challenge *E. coli* O157:H7 poses to the beef industry.

Nearly 150 industry members, academics and government officials shared information about *E. coli* O157:H7's incidence in beef and in other foods and the pathogen's impact on public health. Experts also detailed recommended best practices that identify and help manage the *E. coli* risk in beef products.

AMI President and CEO J. Patrick Boyle opened the briefing by detailing the progress that the industry has made over the last two decades in enhancing beef safety, but acknowledged that trends in 2007 gave the beef industry pause. A slight uptick in *E. coli* O157 incidence in ground beef represented a departure from the sustained declines that have been observed since 2000.

"We all share a common goal: to produce the safest beef possible," Boyle said.

He noted that given the industry's food safety track record, "Much is expected of industry, and rightfully so. We are eager to meet those expectations."

USDA Under Secretary for Food Safety Richard Raymond, M.D., said USDA is redoubling efforts to ensure meat safety through actions including enhanced sampling programs and a new, more sensitive test method to detect *E. coli* O157:H7.

Despite many questions surrounding the cause of the uptick in *E. coli* O157, Raymond said "I don't believe the industry got complacent."

He detailed the agency's use of "Public Health Alerts" to convey information when insufficient details are known to recommend recalling a specific product. While he acknowledged that these alerts have been controversial, he indicated that the industry can expect them to be used periodically going forward.

Raymond detailed USDA's agenda to turn the trend, and he also offered reassurance: "It's not a disaster. People should not be afraid to eat ground beef."



“We all share a common goal: to produce the safest beef possible. Much is expected of the industry and rightfully so. We are eager to meet those expectations.”

- J. Patrick Boyle, President and CEO, American Meat Institute

Centers for Disease Control Chief of the Enteric Diseases Epidemiology Branch Patricia Griffin, M.D., offered a detailed examination of the epidemiology surrounding human cases of *E. coli* O157, as well as consumer food safety behavior. While she did not have foodborne illness trend data for 2007, she said she was not expecting major changes and predicted that the trends would be "close to the status quo." (See page 6)

FSIS Holds Meeting to Discuss Expansion of *E. coli* Policies

The Food Safety and Inspection Service (FSIS) recently held a conference titled, "Shiga Toxin-Producing *E. coli*, Addressing the Challenges, Moving Forward with Solutions."

According to FSIS the purpose of meeting was "to discuss challenges and proposed solutions in moving forward to address recalls and illnesses related to *E. coli* O157:H7." The meeting also included discussion of non-O157:H7 shiga toxin producing *E. coli*, and results of recent Food Safety Assessments. FSIS stated that the increasing number of outbreaks in 2007 related to *E. coli* O157:H7 in beef and the number of beef recalls that occurred as a result of *E. coli* O157:H7 in 2007 is concerning.

FSIS is contemplating a broad definition of adulteration with *E. coli* O157:H7 similar to that in place for *Listeria*

monocytogenes. Under such an approach *E. coli* O157:H7, if present on any raw beef product or ready-to-eat product, would be considered to be an adulterant. FSIS officials indicated that they believe that slaughter establishments should pay more attention to the microbial status of intact beef and primals because *E. coli* O157:H7 isn't considered an adulterant in those products unless it's known that the product is intended for use in grinding or non-intact product.

During the meeting, there was an outcry for more focus on interventions at pre-harvest from the audience, both from industry and from consumer representatives. The agency was encouraged to work with other federal agencies to more rapidly license and approve pre-harvest interventions. (see page 8)

FDA Unveils New Draft Policy to Address *Listeria* Control in Food Administration Recommends Creation of Two Categories for RTE Foods

The Food and Drug Administration (FDA) has announced a new draft compliance policy for control of *Listeria monocytogenes* (*Lm*) in ready-to-eat (RTE) foods that for the first time creates different policies for foods that support growth of the organism and foods that do not. AMI has long sought the Food Safety and Inspection Service (FSIS) to adopt a similar science-based policy which reflects international standards adopted by Europe, Canada and other nations.

For foods that do not support growth of *Lm*, FDA will revise its tolerance level from zero to 100 colony forming units per gram of food (cfu/g). The “zero tolerance” standard for those RTE foods that support the growth of the pathogen will remain the same.

A public meeting was held on March 28, 2008 to receive public comments on the proposed changes to the agency’s policy for *Listeria monocytogenes* (*Lm*) in ready-to-eat (RTE) foods that are under the jurisdiction of FDA.

FDA’s proposed new policy recommends the creation of two categories for RTE foods: those that support growth of the pathogen and those that do not.

The draft CPG defines RTE foods that do not support growth of *Lm* using the following criteria: The pH of the food is less than or equal to 4.4; or is customarily held and consumed in a frozen state; or the water activity of the food is less than or equal to 0.92; or is processed using an effective listeristic control measure (e.g., an antimicrobial substance or a combination (See page 8)

AMIF Hosts 2008 Advanced *Listeria* Intervention and Control Workshop

The AMI Foundation sponsored the 2008 Advanced *Listeria* Intervention and Control Workshop in Chicago, Ill., Jan. 29 and 30.

This session was co-hosted by the National Association of Meat Processors (NAMP) and was the 17th time this workshop has been offered for industry since 2000. The workshop continues to get very positive reviews because of the industry-driven, peer-based instruction and hands-on break out sessions where attendees are able to interact and problem-solve with other participants in small group settings.

The following individuals served as instructors for this event: Bruce Tompkin, Ph.D., Food Safety Consultant; Joe Stout, Kraft Foods North America; John Butts, Ph.D., Land O’Frost, Inc.; Peter Bodnaruk, Ph.D., Ecolab, Inc.; Gene Bartholomew, John Morrell & Company; Tim Freier, Ph.D., Cargill; John Weisgerber, Weisgerber Consulting, LLC; Bob Reinhard, Sara Lee Food and Beverage; Loren Lange, USDA-FSIS.

Plans are being made to host the next *Listeria* workshop in January 2009. Please contact Randy Huffman (rhuffman@meatami.com) or Marie Ternieden (mternieden@meatami.com) for further information.

EFSA Updates EU Scientific Advice on *Listeria* Risk in RTE Foods

Scientists at Europe’s food safety agency have updated advice on the risks in foods from *Listeria*.

An opinion published in the Scientific Panel on Biological Hazards (BIOHAZ) of the European Food Safety Authority (EFSA) recommends that efforts to reduce risks to human health should focus on risk reduction practices both during the production process of ready-to-eat foods (RTE) and at home by consumers.

The Panel recommended that to better assess the risk of the foods responsible for foodborne *Listeriosis* it was necessary to investigate *Listeria* cases more thoroughly and generate and analyze data on the consumption in the European Union of RTE in which *Listeria* can be found.

Different approaches are taken by public authorities across the world in monitoring the levels of *Listeria*. In the European Union, there are maximum safety tolerance levels for *Listeria* in food products.

The Panel concluded that keeping to these limits leads to very low numbers of *Listeriosis* cases in humans as most *Listeriosis* cases are due to the consumption of ready-to-eat foods which support growth of *Listeria* and develop a high concentration of *Listeria* along the food chain.

In its advice to industry, the Panel identified the following as key areas for attention: food packaging and preparation practices in the food chain (such as the slicing of RTE meat products), storage temperatures, general industrial good hygiene practices and the education and training of food handlers.

The Panel also advised that consumers should continue to observe recommended storage temperatures and keep food appropriately chilled at all times, and take note of the shelf-life of food in their refrigerators. Good food hygiene and preparation principles also play an important role in the prevention of *Listeriosis* and other foodborne infections.

USDA Grants Conditional License for First *E. coli* Vaccine

Bioniche Life Sciences Inc., a research-based, technology-driven Canadian biopharmaceutical company, has received notice from the United States Department of Agriculture (USDA) that the latest data for its *E. coli* O157:H7 cattle vaccine “meets the ‘expectation of efficacy’ standard” and is eligible for a conditional license, providing the company develops a plan that would collect sufficient data to move the product to full licensure.

The Bioniche vaccine is the world’s first vaccine that may be used as an on-farm intervention to reduce the amount of *E.*

coli O157:H7 shed by cattle. Bioniche and its collaborators have been moving the vaccine toward commercial availability for eight years and it has been extensively tested at the University of Nebraska-Lincoln.

The conditional license, when granted, will provide the company full access to the U.S. market with two restrictions: at least one step in the manufacturing process must be performed in the United States and Bioniche will not be permitted to use a trademark name for the vaccine.

FDA Unveils New Policy to Address *Listeria* Control in Food

(From page 7)

of factors such as pH, water activity, and antimicrobial substances.

For the category of foods that support the growth of *Lm* during the shelf life, FDA policy does not change and the agency will consider the food to be adulterated when *Lm* is present in the food based upon the analytical method that can detect 1.0 cfu per 25 grams (g) of food (i.e. 0.04 cfu/g).

For the category of foods which have been determined to not support the growth of *Lm*, FDA may regard the food as

adulterated when *Lm* is present at or above 100 cfu/g of food.

“We look forward to reviewing and commenting to the Food and Drug Administration’s *Listeria monocytogenes* draft guidance on *Listeria monocytogenes* control in food,” said Randall Huffman, Ph.D., president of the American Meat Institute Foundation (AMIF). “AMI will review and provide comments to the agency on this important initiative.”

To view these documents, go to www.access.gpo.gov/su_docs/fedreg/frcont08.html or the FDA’s Web site at www.fda.gov.

FSIS Holds Public Meeting to Discuss Possible *E. coli* Policy Expansion

(From page 4)

AMI President and CEO J. Patrick Boyle sent a letter to U.S. Secretary of Agriculture Ed Schafer expressing concern with the possible policy expansion.

“That FSIS is contemplating further expanding its policy concerning when the presence of *E. coli* O157:H7 (*E. coli*) renders a beef product adulterated is extremely troubling and is

unsupported by science or the law,” said Boyle.

A transcript of the meeting will be posted to the agency’s Web site in the coming weeks.

Presentations given at the meeting are available at www.fsis.usda.

AMI Environmental Conference to be Held In Kansas City, June 5-6

The American Meat Institute’s Environmental Conference will be held June 5-6 at the Marriott Country Club Plaza in Kansas City, Missouri.

Conference highlights include sessions on: environmental compliance; indirect discharge problems; waste-to-energy innovations; negotiating with POTWs and other regulators; innovations in water re-use; and emerging technologies; regulatory issues; stewardship; and sustainability.

A special reception will be held on Thursday evening to

honor the recipients of the 2008 Environmental Recognition (MAPS) awards.

Environmental MAPS 4-Tier Recognition Awards were developed to provide recognition of a company’s dedication to continuous environmental improvement, as witnessed by the development and implementation of Environmental Management Systems (EMS).

To register for the conference, go to the Events/Education section of <http://meatami.com>.

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

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Ifigenia Geornaras, John Sofos	Colorado State University	Effect of Traditional and Modified Enhancement Solution Ingredients on Survival of <i>Escherichia coli</i> O157:H7 during Storage and Cooking of Moisture-enhanced Beef

¹ Co-funded with the National Cattlemen's Beef Association

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
Kathy Glass, James Claus	University of Wisconsin	Minimum Nitrite Levels Required to Control <i>Listeria monocytogenes</i> on Ready-to-Eat Meat and Poultry Products
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

Ongoing AMIF Research – *Salmonella*

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Annette O'Connor ²	Iowa State University	A Systematic Review of Literature on Pork Chain Epidemiology

² Co-funded with the National Pork Board

Ongoing AMIF Research – Targeted Research

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Bradley Marks, Alicia Orta-Ramirez, Alden Booren, Elliot Ryser	Michigan State University	Determine the Likelihood that <i>Salmonella</i> Develops Heat Resistance during Thermal Processing of Commercial, Whole-Muscle, Ready-to-Eat Meat Products
Jeffrey Savell, Kerri Harris, Alejandro Castillo, Wesley Osburn	Texas A&M University	Evaluation of Alternative Cooking and Cooling Procedures for Large, Intact Meat Products to Achieve Lethality and Stabilization Microbiological Performance Standards
Randall Phebus, Douglas Powell, Harshavardhan	Kansas State University, University of	Beyond Intent: Assessment and Validation of On-package Handling and Cooking Instructions for Uncooked, Breaded Meat and Poultry Products to Promote Consumer Practices

Nutrition News Corner

Lean Beef Can Enhance Muscle Development in Older Americans

A new study found that consuming four ounces of lean beef protein each day can help enhance muscle development by 50 percent in older Americans.

The research study “Aging Does Not Impair the Anabolic Response to a Protein-Rich Meal” examined the role of beef in stimulating growth in older Americans, which is critical to helping people avoid bone fracturing and to living well and independently as they age.

These results suggest that consuming an adequate amount of lean protein can lead to an improved ability to increase or maintain muscle mass, and as a result, may delay the onset of sarcopenia or loss of muscle.

American Journal of Clinical Nutrition, 2007, 86: 451-256

Lean Meat Critical First Food for Breastfed Infants

A research review in the *Journal of Nutrition* has found that iron- and zinc-rich meats are important first foods for breast-fed infants to provide essential micronutrients.

In addition, the American Academy of Pediatrics, the World Health Organization and The Centers for Disease Control and Prevention all recommend meat as a complementary food to ensure that breastfed infants consume adequate amounts of these important nutrients.

Journal of Nutrition, 2007, February, 511S-517S

Staff on the move

The following is a list of recent industry meetings where AMI staff attended or participated as invited speakers.

Randy Huffman, president, American Meat Institute Foundation

AMI/NMA *E. coli* briefing, Arlington, Va.
Moderator, Intervention Research

AMIF *Listeria* Intervention and Control Workshop, Chicago, Ill. (coordinator)

University of Nebraska, Lincoln, Neb.
“Food Safety and Diet--Health Issues Update”

Annual Meat Conference, Nashville, Tenn.
“*E. coli* Surveillance and Prevention Update”

Annual Beef Safety Summit, Dallas, Texas
(invited participant)

Ohio State University Thermal Processing Workshop, Columbus, Ohio
“Importance of Thermal Processing to the RTE meat and Poultry Industry”

FSIS public meeting on Shiga Toxin Producing *E. coli* in beef, Washington D.C. (invited panelist)

FMI Food Safety Task Force meeting, Las Vegas, Nev.
“Key Food Safety Issues affecting the Meat Industry”

Mark Dopp, senior vice president, regulatory affairs

Annual Meat Conference, Nashville, Tenn.
“Country-of-Origin Labeling Compliance”

Janet Riley, senior vice president, public affairs

Annual Meat Conference: Nashville, Tenn.
“Animal Welfare and Activism; What You Need to Know”

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