

AMI Foundation News

A quarterly update on research, education and information

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BOARD

Van Ayvazian

Boar's Head Provisions Co., Inc.

Wesley Batista

JBS Swift & Company

J. Patrick Boyle

American Meat Institute

Rod Brenneman

Seaboard Foods

Bill Buckner

Cargill, Incorporated

George Chappelle

Sara Lee Food & Beverage

Philip Clemens

Clemens Family Corporation

Henry A. Davis

Greater Omaha Packing Co., Inc.

Tim Day

Bar-S Foods Co.

Karl Deily

Sealed Air Corporation

Jeffrey Ettinger

Hormel Foods Corporation

Neil Genshaft

Fresh Mark, Inc.

John Griffin

Griffin Industries, Inc.

James H. Hodges

American Meat Institute

Gary Jacobson

Indiana Packers Corporation

Carl W. Kuehne

American Foods Group

Michael McCain

Maple Leaf Foods Inc.

Nick Meriggjoli

Kraft Foods, Inc./Oscar Mayer

John Miller

National Beef Packing Co., LLC

David Miniati

Ed Miniati, Inc.

Brian Nilsson

XL Foods, Inc.

Larry Odom

Odom's Tennessee Pride Sausage Inc.

Larry Pope

Smithfield Foods, Inc.

Dennis Vignieri

Kenosha Beef International, Ltd.

FSIS *E. Coli* O157:H7 Data Not Reliable Source For Measuring Overall Trends

Given the changes that USDA's Food Safety and Inspection Service (FSIS) has made over time in its collection of ground beef samples and the laboratory methods used to analyze those samples, *E. coli* O157:H7 prevalence rates reported by FSIS are not a reliable indicator of actual trends that may be occurring, according to AMI Vice President of Food Safety and Inspection Services Scott Goltry. Goltry made his remarks during the Canadian Cattlemen's Association's *E. coli* O157:H7 workshop in November.

While overall prevalence rates of *E. coli* O157:H7 in ground beef and associated illnesses have shown dramatic

Industry Increases Flexibility In Heating, Cooling Muscle Cuts While Complying With Rules

The industry may have increased flexibility associated with heating and cooling large, whole-muscle cuts while still complying with the required performance standards, a new AMI Foundation-funded Texas A&M University study has found.

Large, cured bone-in hams and large uncured beef inside rounds were utilized in this two-phase study.

Phase 1 of the study investigated the effect

reductions since 2000, data for 2008 show a two-fold increase from 2007. Goltry

noted that there are a number of factors that significantly influence this upward trend. For example, in 1998, the sampling size was increased more than ten-fold from 25 grams to 325 grams. One year later, FSIS adopted a new and far more sensitive analytical method. In 2002, FSIS required that every plant reassess HACCP plans to ensure optimal *E. coli* O157:H7 control.

Perhaps

most importantly, the plant size targeted for sampling has changed over time, with more samples being taken from smaller plants. For the plants that produce the majority of product, the percent positive rate has remained constant. When the (see page 3)

“It is not scientifically credible to make comparisons to data sets over time when the sampling methods, data points and data sets are moving.”

- Scott Goltry, vice president of Food Safety and Inspection Services, American Meat Institute



Phase 2 of the study investigated (see page 5)

AMIF President Accepts Appointment With Maple Leaf Foods Hodges To Serve As Interim President; Booren Joins AMI Foundation

Former AMIF Foundation President Randy Huffman, Ph.D., has been appointed chief food safety officer for Maple Leaf Foods. Huffman assumed this position effective January 5, 2009.

As chief food safety officer, Huffman will have overall responsibility for leading Maple Leaf's food safety and quality programs across the company. This will involve identifying and assessing global best operating practices, technologies, ingredients and resources that support Maple Leaf's leadership in food safety and quality assurance. He will also support the establishment of a Food Safety Advisory Council, a team of experts who will increase the company's access to global knowledge and expertise in areas of food safety, microbiology and public education.

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

“ I have been honored to work with AMI staff and members who are professionals that strive toward producing a safer meat supply.



- Former AMIF President Randy Huffman

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, Gainesville, Fla.

“The meat and poultry industry has come a long way in the last decade in achieving dramatic reductions in pathogens,” said Huffman. “I have been honored to work with AMI staff and members who are professionals that strive toward producing a safer meat supply,” he added. “I now look forward to rejoining the private industry to apply many of the food safety principles I have had the opportunity to observe and act on at AMI. Maple Leaf is committed to enhancing its food safety culture, and I am honored that they will allow me to be part of that process.

AMI Executive Vice President Jim Hodges will serve as interim president of the Foundation while AMIF continues to seek and interview candidates to fill (see page 3)

Study: Modified Atmosphere Packaging Protects Consumers

Modified atmosphere packaging (MAP) of beef products protects the consumer and can result in a safer ground beef supply, a new AMIF-funded Texas Tech University study has found.

Ground beef products may be subjected to temperature abuse before or after purchase by consumers, therefore, the objectives of this study were to determine if *E. coli* O157:H7 and *Salmonella* growth was inhibited under extreme temperature abuse conditions in various MAP packaging environments compared to traditional PVC overwrap packaging.

To evaluate this objective, a cocktail of *E. coli* O157:H7 or *Salmonella* was used to inoculate ground beef patties. The packaging types were: vacuum bags (VAC), chub (overwrap) and three different modified atmosphere packaging (MAP) trays with a high oxygen blend, a low

oxygen carbon monoxide MAP and low oxygen MAP.

Each tray or bag contained two patties. One package from each packaging type was processed after 24 hours of refrigeration in the dark, in walk-in coolers. On day five of dark storage at 4 degrees Celsius, the inoculated ground beef chubs were unpackaged and placed onto plastic trays with overwrap film and were placed in the retail case for 24 hours.

On day six, the packages were randomly placed in three groups for temperature abuse. After the temperature abuse, the packages were placed back in the dark walk-in coolers. One package from each combination was taken on day 9, 11, 14, and 24 and was sampled for *E. coli* O157: H7, *Salmonella* mesophilic plant count and total psychrophiles.

E. coli O157:H7 growth was higher in (see page 4)

AMIF Releases Six New Videos In Consumer Education Series

As part of its commitment to food safety education, the American Meat Institute Foundation (AMIF) has added six new videos to its “Ask the Meat Science Guy” consumer education video series. AMIF unveiled the videos at the National Association of Farm Broadcasters’ Annual Convention in Kansas City, Mo.



AMIF’s “Ask The Meat Science Guy” consumer education video series features hot topics such as how to tell when meat is fresh.

News Network: www.youtube.com/meatnewsnetwork.

In the videos, Huffman addresses topics that include: sodium nitrite benefits and safety; cooking steaks versus cooking hamburgers; safe meat handling during pregnancy; the USDA meat inspection process; how to tell when meat is fresh; how hot dogs and sausages are made; how “enhanced” meat products are made; kosher meat; and the difference between fresh and aged beef.

“Ask the Meat Science Guy,” which features well-known meat expert Randy Huffman, Ph.D., former president of the AMI Foundation, is a nine-part, short video series that provides answers to many of the questions consumers pose about meat and meat safety. The videos are currently featured on AMI’s YouTube channel, Meat

For more information on meat safety, visit <http://www.meatsafety.org/>, and for more information on the “Ask the Meat Science Guy” series, contact Director of Media Outreach Tom Super at 202-587-4238 or tsuper@meatami.com.

E. coli O157:H7 Data Not Always Reliable In Trend Analysis (from page 1)

rates for mid sized plants are factored in, the results show a downward trend. However, the plants that produce the smallest volume of product have had the largest increase, and since a large number of samples are from this category, it has dramatically caused the overall *E. coli* O157:H7 rate to show an increase.

“It’s not scientifically credible to make comparisons to data sets over time when the sampling methods, data points and data sets are moving,” said Goltry. Goltry notes that the real question is what has caused all overall reduction trends and if these trends will continue.

Goltry says that industry is hoping the answer to the second question is a resounding “yes.” He explains that there are an abundance of theories as to why the dramatic decline in prevalence has occurred over the last decade, but these remain yet unproven. “However, we strongly believe that the cooperative efforts of FSIS and industry to reassess HACCP plans and to implement more aggressive intervention programs and to institute proven sampling programs for *E. coli* O157:H7 has had an impact,” he adds.

USDA has also said the trend data have limitations. At a public meeting to discuss a new compliance guidance, Dr. Jose Emilio Esteban, FSIS laboratory director, said that USDA collected 12,000 samples in 2007 and that 24 percent of the samples were positive. During calendar year 2008, through September 14, Esteban said that 8,400 samples had been collected and that the *E. coli* O157:H7 positive rate had doubled. “Now, while it might appear that it is significant difference, if you were to be very strict statistically, there is still not a significant difference because at those low levels of prevalence, the variation is enormous,” Esteban said.

AMIF Staff Changes

(from page 2)

Huffman’s position.

Betsy Booren, Ph.D., was named director of scientific affairs. Booren recently completed her Ph.D. in food science from Texas A&M University (TAMU). At TAMU, Booren taught courses on nutrition, food science and advanced meat science, oversaw laboratory facilities and assisted with extension programs. Booren received her master’s degree in animal science from the University of Nebraska and her bachelor’s degree in food science from Michigan State University.

Additionally, Andrew Milkowski, Ph.D., adjunct professor, Department of Animal Sciences, University of Wisconsin and former Kraft Foods fellow, has been retained to provide technical services for the Institute. Milkowski will focus on diet and health issues.

AMIF Honors Tyson VP Dean Danilson For Scientific Achievement

Dean Danilson, Ph.D., vice president of food safety and quality assurance at Tyson Foods, Inc., Dakota Dunes, South Dakota, was named 2008 recipient of the American Meat Institute Foundation (AMIF) Scientific Achievement Award.



Former AMIF President Randy Huffman presents Dean Danilson, Ph.D., with the 2008 AMIF Scientific Achievement Award during AMI's annual awards reception in October.

According to the AMIF, Danilson has contributed his knowledge and ideas toward solving some of our industry's toughest challenges, from beef safety intervention strategies aimed at reducing *E. coli* O157:H7, to testing methods designed to detect and destroy this pathogen.

destroy harmful pathogens on beef," said AMI Immediate Past Chairman Dave Miniati, president of Ed Miniati, Inc., who presented the award.

Danilson has been a popular and well-respected instructor at the AMIF's beef safety workshops. He has also been a tireless and practical scientific voice to the U.S. Department of Agriculture (USDA) on a host of food safety issues.

"Dean Danilson is known for his tenacity in solving problems and his generosity in sharing solutions, such as innovative beef safety intervention strategies and testing methods designed to

Registration Now Open For Annual Meat Conference In Denver

Registration is now open for the industry's premier retail meat merchandising educational event, the Annual Meat Conference, slated for March 8-10, 2009, at the Sheraton Denver Hotel, Denver, Colo.

Co-sponsored by the American Meat Institute Foundation (AMIF) and the Food Marketing Institute (FMI), the conference each year attracts 800 members of the retail food and meat industries. It is considered the leading educational event focusing on meat and poultry marketing innovations, merchandising issues and consumer purchasing trends.

Associate sponsors for the conference include the

American Lamb Board, National Cattlemen's Beef Association, National Chicken Council & U.S. Poultry and Egg Association, National Pork Board and the National Turkey Federation.

The advance registration fee for the conference is \$595 per person, or \$545 for three or more members of the sponsoring associations. On-site registration is \$695 per person, or \$645 for three or more members registering together or \$515 when 10 or more retailers/wholesalers register together. The nonmember registration rate is \$1,290.

Visit <http://www.MeatConference.com> to view the complete conference program and register online.

Low-Ox Packaging Results In Less Growth of *E. coli* O157:H7

(from page 2)

PVC than in the other packaging treatments. *E. coli* O157:H7 growth was lower in low oxygen MAP and low oxygen carbon monoxide MAP than the other three packaging types. These differences are regardless of temperature, and regardless of sampling day. *Salmonella* was higher on days 9 and 11 when compared to the other days, regardless of temperature and packaging type. The storage temperature and packaging type were not significantly different throughout the 24-day shelf life.

Overall, packaging in lower oxygen environments

resulted in significantly less growth of *E. coli* O157:H7 growth during temperature abuse. Samples packaged under these conditions had fewer *E. coli* O157:H7 during temperature abuse and under no abuse conditions.

"This study, as well as two other previous studies, indicate that the absence of oxygen in the packaging environment prevents the growth of *E. coli* O157 during temperature abuse in ground beef and there is even some reduction of the pathogen under certain circumstances," said Mindy Brashears, Ph.D., author of the study.

AMIF To Host Advance Listeria Workshop In February Topics Will Include Current State of Control, Sanitary Best Practices

Registration is now open for the 2009 American Meat Institute Foundation Advanced *Listeria* Intervention and Control Workshop, scheduled for February 3-4, at the Allerton Hotel in Chicago, Ill. The workshop is being co-sponsored by the North American Meat Processors Association (NAMP) and the Canadian Meat Council (CMC).

The two-day workshop is designed to help manufacturers of ready-to-eat (RTE) meat and poultry products examine the issues surrounding control methods and to provide experience in developing appropriate sanitation protocols and testing plans for processing RTE products. In addition to detailing optimal product safety and strategies to implement best practices for RTE processing, the workshop offers a key benefit: helping to assure compliance.

The first day of the event will begin with a discussion on the current state of *Listeria* control, followed by sessions on sanitary equipment and design and sanitation best practices.

The first day luncheon topic will focus on *Listeria* rule updates and implementation, followed by afternoon sessions on understanding product risk and appropriate

intervention, developing and evaluating routine sample plans and lot and line segregation. The day will conclude with a reception and technology fair and panel discussion.

On the second day, attendees will benefit from discussions concerning a number of case studies. Sessions on data analysis, corrective actions and successfully completing risk-based *Listeria monocytogenes* sampling (RLM) and Food Safety Assessment will also be featured.

This workshop is limited to 60 participants and is rapidly reaching full capacity. To register online, go to <http://www.meatami.com> and click on the Events/Education section. AMI, NAMP and CMC members receive the special conference rate of \$725. Three or more member company attendees receive a discounted rate of \$625. All other attendees may register for the regular rate of \$825. For more information, contact Coordinator for Convention and Exposition Services Rosie Levine at rlevine@meatami.com

Hotel rooms are available at a special rate of \$160 for a standard room. To make hotel reservations, go to https://reservations.ihotelier.com/crs/g_reservation.cfm?groupID=117608&hotelID=13514.

Study Examines Flexibility In Heating And Cooling Temps

(from page 1)

the effect of alternative stabilization parameters on log growth of *Clostridium perfringens*. Ham stabilization treatments investigated extending the times taken to reduce internal product temperature from 54.5 degrees Celsius to 26.7 degrees Celsius and from 26.7 degrees Celsius to 7.2 degrees Celsius, independently.

Further, a “worst case scenario” and a control defined by current FSIS Appendix B guidelines also were assessed. The “worst case” treatment evaluated the effects of cooling a product at room temperature (approximately 22.8 degrees Celsius) in place of normal cooling procedures in a temperature controlled environment. Roast beef stabilization treatments investigated extending the times taken to reduce internal product temperature from 54.5 degrees Celsius to 26.7 degrees Celsius and from 26.7 degrees Celsius to 4.5 degrees Celsius, independently.

Results of the study showed at least a 6.5 log reduction in *S. Typhimurium* across all lethality treatments for both bone-in hams and beef rounds. Further, coliform counts

also were significantly reduced and *S. aureus* toxin analysis returned negative results for toxin production across all treatments for both products.

Stabilization data failed to show significant growth (greater than one log growth) of *C. perfringens* for any treatment, with the exception of the “worst case” scenario for roast beef.

As expected, greater than one log growth of *C. perfringens* was reported for uncured roast beef maintained at room temperature for cooling.

“This research is especially important for operations producing large diameter products because it supports the use of more flexible temperatures and times for meeting the lethality and stabilization performance standards,” said Kerri Harris, Ph.D., author of the study. “The results clearly demonstrate that the lethality and stabilization performance standards can be met using more flexible temperatures and times than those outlined in Appendix A or Appendix B.”

Science Soundbites

High Pressure Processing May Reduce *E. coli* O157:H7 on RTE Meats

High pressure processing (HPP) has potential as a lethal treatment for *E. coli* O157:H7 on ready-to-eat (RTE) meats with minimal change in consumer appeal, a study by Health Canada has found.

In this study, the potential for HPP to kill *E. coli* O157:H7 in two RTE meats (Hungarian salami and all beef salami) was investigated. The RTE meats were inoculated with a five-strain cocktail of *E. coli* O157:H7, vacuum packed and then pressure treated at 600 MPa with a hold time of three minutes.

Samples were stored at 15 degrees Celsius for 28 days. HPP initially reduced *E. coli* O157:H7 numbers on both RTE meats by greater than 4 log CFU/g. However, with enrichment and immunomagnetic separation, scientists were able to recover *E. coli* O157:H7 from the samples. During storage, the numbers of *E. coli* O157:H7 increased in all beef samples but remained static on the Hungarian salami, which had a restrictive pH and water activity.

Increasing the hold time to six or nine minutes did not result in additional reduction of *E. coli* O157:H7. The sensory appeal of the two products was not significantly changed by HPP as determined by a sensory panel (n=50). Color analysis also revealed no significant changes.

Journal of Food Protection, Vol. 71, No.11, pages 2182-2189

Blade Tenderization Does Not Increase Risk of *E. coli*

Assuming that the prevalence and levels of *E. coli* O157: H7 on the surface of non-intact subprimals remain low and that best practices are followed for operating and monitoring tenderization equipment, non-intact blade-tenderized steaks do not present a greater risk to consumers than otherwise similar meat that is intact, provided the meat is properly cooked, researchers at USDA have found. These findings are in line with other, similar studies in this area.

In phase one of this study, in general, for subprimals inoculated with various levels of *E. coli* O157: H7 and tenderized once on the lean side (LS), the level of pathogen recovered from the top four centimeters and the total level recovered from the deepest four centimeters were essentially the same, regardless of the inoculation level. These results indicate that the level of inoculum that is applied to the surface does not affect the levels of the pathogen that are transferred into the interior of the subprimal.

Likewise, in phase two of this study, levels of the pathogen transferred into all segments of fat and lean samples passing either once or twice through the tenderizer were similar. These data suggest that translocation was not appreciably influenced by whether innoculum was applied to the fat or lean side of the subprimal nor was it appreciably influenced by the number of times the subprimal passed through the tenderizer.

Journal of Food Protection, Vol.71, No. 11, pages 2190-2197

Study Compares Antimicrobial Efficacy of Hide Decontamination Strategies

A recent study by Colorado State University has examined the efficacy of several beef hide interventions to identify those that more effectively reduce levels of *E. coli* O157:H7 and *Salmonella*.

Whole beef hides were inoculated with *E. coli* O157:H7 and *Salmonella* and decontaminated with sprays of solutions of acetic acid, lactic acid, sodium hydroxide, sodium metasilicate or sodium hydroxide followed by high-pressure washing with chlorinated water or water, or by deluging with solutions of potassium cyanate or sodium sulfide.

All spraying treatments resulted in the removal or visual organic material, whereas dehairing treatments (potassium cyanate and sodium sulfide) successfully removed hair along with visual organic material.

The potassium cyanate, sodium sulfide and sodium hydroxide/ chlorinated water resulted in the greatest reductions of *E. coli* O157: H7 and the sodium sulfide and sodium hydroxide/chlorinated water resulted in the greatest reductions of *Salmonella*.

The sodium hydroxide, acetic acid and lactic acid treatments also lowered both *E. coli* O157:H7 and *Salmonella*.

Journal of Food Protection, Vol. 71, No. 11, pages 2223-2227

Ongoing AMI Foundation Research

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
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
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 (Targeted Research)
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)
Charles Kaspar, M. Ellin Doyle, John Archer ³	University of Wisconsin	White Paper on Human Illness Caused by <i>Salmonella</i> from All Food and Non-Food Vectors (Targeted Research)

² Co-funded with the National Pork Board

³ Co-funded with the National Pork Board and National Cattlemen's Beef Association.

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)

Ongoing AMIF Research – Diet and Health

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

²Co-funded with the National Pork Board

Calendar of Events

For additional information on any of these upcoming events, or to register, please visit our Web site at MeatAMI.com and navigate to Events/Education or contact Heather Schoch at 202/587-4241 or hschoch@meatami.com.

Annual Meat Conference

When: March 8-10, 2009

Where: Sheraton Denver Hotel, Denver, Colo.

Livestock Transportation Conference When: March 17

Animal Care and Handling Conference When: March 18-19
Where: Westin Crown Center, Kansas City, Mo.

Conference on Worker Safety, Health & Human Resources

When: April 5-7 2009

Where: Westin Tabor Center, Denver, Colo.

AMI Foundation Contacts

All AMI Foundation staff can be reached at:

1150 Connecticut Avenue, NW, 12th Floor, Washington, D.C. 20036; Phone: 202-587-4200

Jim Hodges

Interim President
jhodges@meatami.com

Susan Backus

Director of Research
sbackus@meatami.com

Betsy Booren

Director of Scientific Affairs
bbooren@meatami.com

Janet M. Riley

Senior Vice President
Public Affairs & Professional Development
jriley@meatami.com

Dave Ray

Vice President, Public Affairs
dray@meatami.com

Tonya Allen

Manager, Public Affairs
tallen@meatami.com