FOUNDATION FOCUS
February 2025

Looking Forward to 2025

The Meat Foundation Board of Directors met in early January to reflect on its first year after the merging of the Foundation for Meat and Poultry Research and Education and the NAMI Scholarship Foundation and chart the course for 2025. In 2024, the Meat Foundation established its mission, vision and values to help guide the organization in the future, which includes an expanded research scope; timely educational offerings; and fostering the industry's next generation. The Foundation continued to award scholarships to students with an interest in careers in the meat industry. It also awarded pork safety research grants.

In 2025, the Foundation will embark on an ambitious fundraising effort to support meat industry advancements through scientific discovery and development. During the meeting, the Board of Directors approved new beef safety and environment research. Results from these projects can provide the scientific basis to support business operations and continuous improvement in the meat industry. The Board also received an update on the scholarship program and investments. There will be a lot of exciting developments in 2025 and the Foundation looks forward to sharing them with you through this newsletter and other means.

IFSAC Releases Annual Report for 2022 on the Sources of Foodborne Illness

The Interagency Food Safety Analytics Collaboration (IFSAC) published its newest annual report, "Foodborne illness source attribution estimates for *Salmonella, Escherichia coli* O157, and *Listeria monocytogenes* – United States, 2022." CDC estimates that, together, these priority pathogens — *Salmonella, Escherichia coli* O157*, Campylobacter,* and *Listeria monocytogenes* — cause nearly two million cases of foodborne illnesses in the U.S. each year. The report found that:

- More than 75% of *Salmonella* illnesses were attributed to seven food categories: chicken, fruits, seeded vegetables (such as tomatoes), pork, other produce (such as nuts), beef, and turkey.
- Over 85% of *E. coli* O157 illnesses were linked to vegetable row crops and beef.
- More than 75% of illnesses were attributed to dairy products, vegetable row crops, and fruit

This collaborative effort between Centers for Disease Control and Prevention, the U.S. Food and Drug Administration, and the U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS) to provide annual attribution estimates continues IFSAC's work to improve foodborne illness source attribution, which can help inform efforts to prioritize food safety initiatives, interventions, and policies for reducing foodborne illnesses.

Scientific Report of the Dietary Guidelines Advisory Committee Released

On December 10, the Departments of Health and Human Services and Agriculture made available the Scientific Report of the Dietary Guidelines Advisory Committee (Committee) along with supplementary materials for data analysis, food pattern modeling, and systematic reviews. The Committee found that a healthy dietary pattern for individuals ages 2 years and older is higher in vegetables, fruits, legumes (i.e., beans, peas, lentils), nuts, whole grains, fish/seafood, and vegetable oils higher in unsaturated fat, and lower in red and processed meats, sugar-sweetened foods and beverages, refined grains, and saturated fat. Some of these healthy dietary patterns also include consumption of fat-free or low-fat dairy and foods lower in sodium, and/or may include plant-based dietary options. Further, the Committee recommends that the proposed Eat Healthy Your Way Dietary Pattern emphasizes dietary intakes of beans, peas, and lentils while reducing intakes of red and processed meats, as supported by systematic reviews as well as food pattern modeling analyses indicating that nutrient goals are generally met with such a shift from the 2020 HUSS to include more plant-based Protein Foods. The Committee also recommends moving Beans, Peas, and Lentils as a subgroup of the Vegetables Food Group to a subgroup of the Protein Foods Group to align with evidence to encourage plant sources of Protein Foods. The Committee proposes reorganizing the order of the Protein Foods Group to list Beans, Peas, and Lentils first, followed by Nuts, Seeds, and Soy products, then Seafood, and finally Meats, Poultry, and Eggs.

The Committee's Scientific Report will be a key resource considered by HHS and USDA as the two departments jointly develop the next edition of the *Dietary Guidelines for Americans*.

MEAT FOUNDATION WEBINAR

Learn more about how the Foundation is Driving Business Impact Through Research:

On November 19, the Foundation held a webinar sharing our research initiatives and their impact on the meat industry. Learn how research investments can benefit your business, gain insights into our past achievements, and how you can contribute to our ongoing efforts. **Watch the video here>>**

FSIS Seeks Nominations for Membership on Food Safety Advisory Committee.

The Food Safety and Inspection Service (FSIS) is soliciting nominations for membership to the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) -- the advisory committee charged with providing impartial scientific advice and recommendations to USDA and other government agencies on microbiological and public health issues relative to the safety of the U.S. food supply. USDA expects to appoint 30 committee members in 2025, whose work will include reviewing FSIS' regulatory approach to Listeria monocytogenes. USDA is seeking nominations from individuals with knowledge and expertise in microbiology, risk assessment, epidemiology, public health, food science and other relevant disciplines to obtain the scientific perspective, expertise, experience and point-of-view of all stakeholders. Nominations are due February 18.

Consumer Food Safety Education Conference

The Beef Checkoff, through its contract with the Foundation, will sponsor the Partnership for Food Safety Education's Consumer Food Safety Education Conference on March 13-14, 2025 in Houston, TX. This conference supports food safety educators in their work to communicate the science of food safety to consumers. As a sponsor, the Beef Checkoff will be provided an opportunity to share post-harvest beef safety research conducted on behalf of the Beef Checkoff and engage with attendees directly. Additional information is available at https://cfsec.org/.

CFSEC 2025
Consumer Food Safety Education Conference

THANK YOU TO THE FOUNDATION'S CONTRIBUTORS

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Understanding the impact of the farm and lairage environments on *Salmonella* contamination in market hogs, University of Wisconsin-Madison, Kansas State University, Texas Tech University, USDA-ARS

Salmonella contamination in market hog tonsils, lymph nodes, feces, and cecal contents likely occurs rapidly, and previous research suggests that the lairage period provides risk for cross contamination to occur. The study objectives are to detect and quantify *Salmonella* from market hogs on-farm, at lairage, carcass swabs, and lymph nodes. The *Salmonella* isolates will be characterized to determine their serotype and the presence of highly pathogenic *Salmonella* at the different stages of sampling. *Salmonella* concentration and serotypes in post-harvest samples will be evaluated to determine if it most closely represents *Salmonella* contamination on-farm or from lairage, and the impact of time spent in lairage.

Funded in part by the National Pork Checkoff.

Survival of African swine fever in pork and processed pork products, Canadian Food Inspection Service, Agriculture and Agri-Food Canada

African Swine Fever (ASF) is a contagious, haemorrhagic viral disease of pigs that is currently spreading westwards throughout Europe and eastwards into China, with significant economic losses along its path. While strict regulatory guidelines are in place to prevent the spread of this virus, little is known about the effectiveness of current meat processing methods in inactivating ASF. In addition, the matrix effect of individual meat products and ingredients on ASF survival is not well documented. This project aims to explore the survival of ASF in different meat products from ASF infected pigs as well as investigate the effect of different ingredients, cooking temperature, storage time and high pressure processing on ASF inactivation in different meat model systems.

Funded in part by the National Pork Checkoff under an ASF Partnership and administered by the Foundation.

A surveillance of *Salmonella* in the lymph nodes of sows and boars, Kansas State University, Texas Tech University

Salmonella contamination remains the leading food safety concern for pork products. The contribution of *Salmonella* in the lymph nodes in sows and boars is unknown. This study will determine *Salmonella* prevalence and concentration in the lymph nodes (subiliac, mesenteric, tracheobronchial, inguinal, axillary, pre-scapular) and tonsils of sows and boars at harvest. The impact of season and region on *Salmonella* prevalence and concentration in the lymph nodes of sows and boars will be evaluated. Positive samples will be serotyped.

Effect of minimally processed animal protein within the *Dietary Guidelines for Americans* on biomarkers for cognitive decline, South Dakota State University

Investigators will leverage an ongoing well-designed, randomized, controlled, crossover, feeding study following the *Dietary Guidelines for Americans* to establish the role of lean animal protein in cognitive health promotion. A minimally processed lean meat incorporated diet will be compared with an isocaloric lacto-ovo-vegetarian control. It is expected the addition of animal protein will enhance nutrient adequacy and reduce markers associated with cognitive decline and neurodegenerative diseases.

Creating Alternative Support for Lethality and Stabilization for Heat Treated and Fully Cooked Meat and Poultry Products, University of Wisconsin, HansonTech

Nearly all meat processors in the United States utilize USDA, FSIS Appendices A and B to ensure adequate thermal lethality and stabilization is achieved for partially and fully cooked products. Through the development and release of updated versions in 2017 and 2021, and the realization that a host of potential food safety vulnerabilities exist, the widespread usefulness and in-plant practical application of these guidance documents has become a significant concern and practical challenge to implement. The primary objective of this study is to develop a scientific-based, regulatory-supported, and industry-useful thermal processing and cooling resource (e.g. cooking and cooling food safety handbook) for validating pathogen destruction and control, and regulatory compliance for partially and fully cooked meat products that can be used in conjunction with or in lieu of USDA, FSIS Appendices A & B.

Funded in part by the Beef Checkoff.

Revealing mechanisms for internal *Salmonella* colonization and persistence in porcine lymphoid and fat tissue, USDA-ARS-NADC - Food Safety and Enteric Pathogens Research Unit

Swine can become persistently infected with *Salmonella*, shedding little to no bacteria in the feces, until subjected to a stressful event, which increases fecal shedding. A clear understanding of the mechanisms of *Salmonella* persistence in porcine immune cells is needed to developing targeted intervention strategies to significantly reduce *Salmonella* carriage in swine and the risk of contamination of products and the environment. The overall hypothesis is that *Salmonella* resides in myeloid-lineage cells in porcine lymphoid tissues and fat, and subsequently modulates the cellular state to limit bacterial clearance. The objectives of this project is to identify the cell types harboring *Salmonella* in pig lymphoid and adipose tissue at various stages of colonization; characterize the cellular response; and identify mechanisms of intracellular colonization.

Funded in part by the National Pork Checkoff.

Characterizing *Salmonella* Isolates from Ground Beef in the United States, Texas Tech University, Kansas State University, University of Georgia, USDA-ARS, Meat Animal Research Center, Food Safety Net Services

It is hypothesized that *Salmonella* serotypes and presence of highly pathogenic *Salmonella* (HPS) in ground beef will vary by geographic location and season depending on the facility. Samples obtained from a separate study will be analyzed to determine the *Salmonella* serotype(s) present in each positive sample and the presence of HPS associated with U.S. ground beef.

Funded in part by the Beef Industry Food Safety Council.

Recently Completed Research

Summarizing the current knowledge and existing knowledge gaps for pre-harvest and post-harvest *Salmonella* contamination in pork, Kansas State University, Triumph Foods

Research on pre-harvest and post-harvest measures to prevent or reduce pathogen contamination have been published. However, knowledge gaps still remain, and a thorough literature review is necessary to fully understand what steps should be taken to address *Salmonella* concerns both preharvest and post-harvest in the swine. Therefore, this project will conduct a thorough search of pre-harvest and post-harvest *Salmonella* research in swine; compile the literature and prepare a written review of the existing knowledge. Knowledge gaps and research recommendations will be identified. Meat Institute members/volunteers will serve as focus group participants to ensure all current knowledge is considered.

Funded in part by the National Pork Checkoff.

Analysis of beef *Salmonella* outbreaks using the USMARC SNP analysis pipeline, USDA-ARS, Meat Animal Research Center

Using the pipeline developed in a previously funded project (see Enhanced Characterization of Sequence Differences Among *Salmonella* isolates within SNP Clusters Identified by the NCBI Pathogen Detection System), genomes from previous beef *Salmonella* outbreaks will be evaluated to characterize the genomic variation between sequenced isolates related to the outbreak. The findings will detail the reliability of Beef *Salmonella* outbreak traceback.

Funded by the Beef Checkoff

Recently Completed Research Funded by the Beef Checkoff and Administered by the Foundation

Developing a Quantitative *Salmonella* Baseline from Ground Beef in the United States, Texas Tech University, Kansas State University, University of Georgia, USDA-ARS, Meat Animal Research Center, Food Safety Net Services

The overall prevalence of *Salmonella enterica* from ground beef samples was determined over the course of 14 months.was quarterly variation with the peak prevalence occurring in the Spring and Fall seasons. Demographic information indicated that *Salmonella* testing was not commonly done on beef trimmings prior to grinding or on final product.

Funded by the Beef Checkoff

2025 MEAT FOUNDATION BOARD OF DIRECTORS

Meat Foundation
Research. Education. Scholarship.

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