FOUNDATION FOCUS



FOUNDATION RELEASES SUPPLEMENTAL NUTRITION SCIENCES REQUEST FOR PROPOSALS

Submissions to the Foundation's 2019-2020 request for proposals are currently under evaluation by the Foundation's Research Advisory Committee, however, the Foundation has issued a supplemental, expedited request for proposals on the nutrition priorities identified below. The Foundation sought proposals in the research areas of food safety, product quality and nutrition sciences, but there remains a critical need for additional proposals in nutrition sciences.

Risk-benefit analysis on the consumption of meat (fresh/minimally processed and further processed meat and poultry products) as a component of a healthy diet and lifestyle.

- Research may address potential risks or implications associated with eliminating meat products from the diet. In addition to nutrition and health outcomes, research can address sustainability topics such as water use, greenhouse gas emissions and other environmental implications.

How does meat (minimally processed and further processed meat and poultry products) intake, particularly as part of a dietary pattern, influence cardiometabolic health outcomes across life stages from the introduction of foods, into childhood, and through older adulthood?

Evaluate the role of meat and poultry (minimally processed and further processed) in various dietary patterns (Dietary Guidelines-related, Mediterranean-style, Dietary Approaches to Stop Hypertension (DASH), vegetarian/vegan, low-carbohydrate diets, and high-fat diets) consumed at each stage of life and:

1. Growth, size, body composition, and risk of overweight and obesity;
2. Risk of cardiovascular disease;
3. Risk of type 2 diabetes;
4. Risk of certain types of cancer.

Proposals should include how meat and poultry products fit in dietary patterns. Research may include modeling and other analyses, among other approaches.

Determine optimal food patterns based on the nutrient recommendations for each stage of life.

Proposals are due to Susan Backus by 5 p.m. EDT on November 4, 2019. Contact Susan Backus or KatieRose McCullough with any questions or to obtain the proposal submission information.

FOUNDATION SECURES FY 20 BEEF CHECKOFF FUNDING

The Foundation for Meat and Poultry Research and Education received nearly $800,000 in FY20 to conduct research on behalf of the Beef Checkoff. Research will address post-harvest beef safety and processed beef nutrition.

"The Foundation is thrilled to be able to administer research on these critical topics on behalf of the Beef Checkoff," said Susan Backus, President, Foundation for Meat & Poultry Research & Education. "The Checkoff investment in post-harvest beef safety and processed beef nutrition research is critical to expanding the knowledge base to ensure regulatory and public health policies are rooted in science; ensuring consumer and customer trust in beef products; and providing value to beef producers by ensuring awareness that beef products are safe and nutritious."

Research funding will be used toward projects addressing current knowledge gaps; facilitating the dissemination of research data and knowledge sharing through meetings, or other events targeted to appropriate stakeholders; developing tools that share post-harvest research results or summarize research to provide guidance and information for beef processing facilities of all sizes; and developing tools that substantiate processed beef products' role in a healthy, sustainable diet and active lifestyle.

BEEF®

Funded by the Beef Checkoff.

Post-harvest beef safety research could address any appropriate research priorities identified by the Foundation's Research Advisory Committee, which may include but are not limited to:

- Identifying the combination of virulence factors that cause human illness in pathogenic *Salmonella* and *E. coli*.
- Evaluating how *Salmonella* exists and moves throughout the supply chain, including regional, seasonal and production practice differences on the prevalence, level and serotype on products, including lymph nodes.
- Evaluating the efficacy of interventions during the grinding process to maximize reduction of microbial contamination in ground beef.

Processed beef nutrition research could address any appropriate research priorities identified by the Foundation's Research Advisory Committee, which may include but are not limited to:

- A risk-benefit analysis on the consumption of processed beef products as a component of a healthy diet and lifestyle.
- How does processed beef intake, particularly as part of a dietary pattern, influence cardiometabolic health outcomes across life stages from the introduction of foods, into childhood, and through older adulthood?
- What is the relationship between types of dietary fat found in processed beef products consumed at each stage of life and neurocognitive development or neurocognitive health?

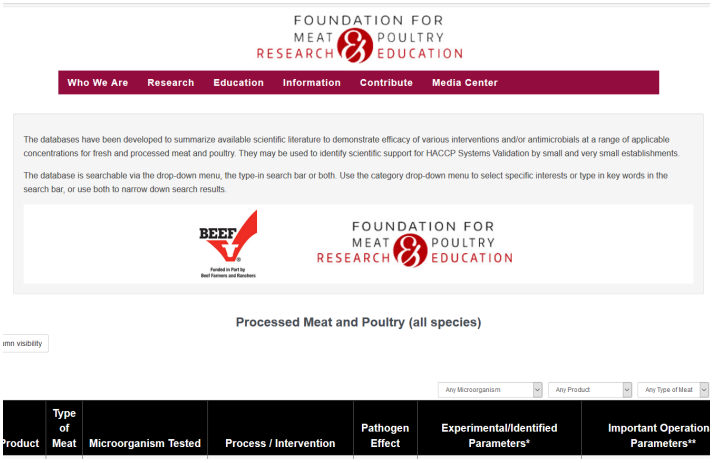
2020 BEEF INDUSTRY SAFETY SUMMIT CALL FOR RESEARCH ABSTRACTS—DUE NOVEMBER 22, 2019

The Beef Industry Safety Summit planning committee invites scientists from universities, USDA-ARS and/or companies to submit research results from projects that were funded by ALL funding sources, not just the Beef Checkoff. The Research Update session will be in the afternoon, Wednesday, March 4th, in San Antonio, TX. Submitted abstracts will be evaluated by a selection committee and applicants will be notified regarding acceptance by COB December 16th. To view the complete Call for Abstracts, visit http://www.beefresearch.org/beefsafety.aspx or http://bifsco.org.

RECENT RESEARCH FINDINGS

Processed Meat and Poultry Validation Database Updated

The Foundation's searchable validation database summarizing the available scientific literature identifying antimicrobial and other interventions for processed meat and poultry has been updated. Small and very small meat and poultry establishments can use this database, along with the processed meat database, in the design of intervention strategies and as scientific support in the validation of their Hazard Analysis and Critical Control Points (HACCP) systems.



The Foundation, on behalf of the Beef Checkoff, partnered with University of Wisconsin, to update the scientific literature detailing the efficacy of various interventions and antimicrobials at a range of applicable concentrations on fresh beef, veal, pork, lamb and poultry products. Complementary updates on fresh meat and poultry products were conducted by Texas A&M University and those spreadsheets were updated earlier this year.

Interventions addressed in the databases include heat, pH control, chemical and clean-label inhibitors, high-pressure processing and irradiation, among others. *E. coli* O157:H7, non-O157 Shiga toxin-producing *E. coli*, *Salmonella*, *Campylobacter* and *Listeria monocytogenes* are among the microbial pathogens covered in the databases.

Both projects were funded in part by the Beef Checkoff. To access the databases, you may visit http://www.meatpoultryfoundation.org/validationdatabase.

Novel Antimicrobial Intervention for Beef Trimmings and Cheek Meat

Research funded by the Foundation through its fiscal year 2019 contract with the Beef Checkoff has recently been completed. The study is pending publication. However, the abstract follows:

Novel Antimicrobial Intervention for Beef Trimmings and Cheek Meat Using Radiant Catalytic Ionization (RCI) in Combination with Zinc Oxide Nanoparticles

N. Kalchayanand, T. L. Wheeler, and J. M. Bosilevac
USDA, ARS – U.S. Meat Animal Research Center

Several antimicrobial spray interventions for beef trimmings and offal products which are high priorities for improving safety and shelf-life are restricted by FSIS regulation of 0.5% limitation of retained water in raw beef after application of antimicrobials. Radiant catalytic ionization (RCI) treatment and zinc oxide nanoparticles (ZnO_NP) are novel technologies that can be applied as post-harvest interventions on surfaces of fresh meat to meet the needs for energy saving, non-thermal, and water conservation antimicrobial treatments. The objectives were to determine effectiveness of RCI, ZnO_NP, and a combined RZnO treatments on the reduction of Shiga toxin-producing *Escherichia coli* (STEC; O157 and non-O157) and *Salmonella* (AMR and non-AMR) inoculated fresh beef trimmings and cheek meat and to evaluate these technologies on improving shelf-life and their effect on meat quality. Beef flanks and cheeks were inoculated with cocktail mixtures of STEC strains (O26, O45, O103, O111, O121, O145, and O157:H7) and *Salmonella*. Inoculated fresh beef tissues were subjected to RCI for 0, 15, 30, 60, and 120 s and to ZnO_NP at 0, 1, 2, and 4 mg/ml and stored for 3 d at 4 ^{o}C. RCI reduced ($P < 0.05$) pathogens on surfaces of beef flanks and cheeks ranging from 0.50 to 1.69 log and 0.6 to 1.18 log, respectively. ZnO_NP at 1, 2, and 4 mg/ml produced the same ($P > 0.05$) reduction of pathogens both on beef flanks and cheeks. Estimated decimal reduction time (D values) for tested pathogens indicated that inactivation time of pathogens on cheeks was longer ($P < 0.05$) than on beef flanks. Beef flanks and cheeks were treated with a combination of RCI (150 s) and ZnO_NP (1 mg/ml) and stored at 4 ^{o}C for 21 d. The combination treatment increased shelf-life of beef flanks and cheeks 2 d and 1.5 d, respectively. The combination treatment had minimal effect on a* (20.83 versus 17.49) of beef flanks, but had no effect on a* (15.40 versus 14.20) of cheek meat. Rancidity of beef flanks and cheeks treated with a combination of RCI and ZnO_NP was undetected (TBARS < 1.0 mg MDA/kg of meat) during storage at 4 ^{o}C for 7d.

IFSAC PUBLISHES REPORT ON FOODBORNE ILLNESS SOURCE ATTRIBUTION ESTIMATES FOR 2017

The Interagency Food Safety Analytics Collaboration (IFSAC), which includes the Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and the U.S. Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS), published foodborne illness source attribution estimates for 2017 for *Salmonella*, *Escherichia coli* O157, *Listeria monocytogenes*, and *Campylobacter*.

The following is a summary of the results:

"We identified 3,728 outbreaks that occurred from 1998 through 2017 and that were confirmed or suspected to be caused by *Salmonella*, *E. coli* O157, *Listeria*, or *Campylobacter*. Of these, we excluded 152 outbreaks with multiple confirmed or suspected etiologies. We further excluded 1,420 outbreaks without a confirmed or suspected implicated food, 824 outbreaks for which he food vehicle could not be assigned to one of the 17 food categories, and three had occurred in a U.S. territory.

"The resulting dataset included 1,329 outbreaks in which he confirmed or suspected implicated food or foods could be assigned to a single food category: 811 caused or suspected to be caused by *Salmonella*, 242 by *E. coli* O157, 40 by *Listeria*, and 236 by *Campylobacter*. Due to down-weighting, the last five years of outbreaks provide the majority of information for the estimates; outbreaks from 2013 through 2017 provide 72% of model-estimated illnesses used to calculate attribution for *Salmonella*, 62% for *E. coli* O157, 79% for *Listeria*, and 58% for *Campylobacter*."

NUTRIRECS SYSTEMATIC REVIEWS OF RED AND PROCESSED MEAT CONSUMPTION

A new study by NutriRECS, released last week in the *Annals of Internal Medicine*, recommended adults continue their current consumption of unprocessed and processed red meat.

NutriRECS (Nutritional Recommendations and Accessible Evidence Summaries Composed of Systemic Reviews), an independent group using systematic reviews to make nutritional recommendations, also used GRADE (Grading of Recommendations Assessment, Development and Evaluation) methods to rate certainty of evidence.

A panel of 14 members, including three community members, from seven countries voted on the final recommendations. Analyzing the data from five systematic reviews that encompassed 54,000 people, the researchers did not find a significant association between meat consumption and the risk of heart disease, diabetes or cancer. They also found a vegetarian diet provided few, if any, health benefits.

The study received heavy media coverage as part of a growing national debate on the validity of observational studies in making nutrition recommendations. The American Heart Association, the American Cancer Society, the Harvard T.H. Chan School of Public Health and others opposed the findings and requested the Annals of Internal Medicine not publish them.

Additionally, the Physicians Committee for Responsible Medicine (PCRM), filed a Federal Trade Commission complaint against the Annals of Internal Medicine for publishing the study alleging NutriRECS made false statements about ill health effects of red and processed meat.

FOUNDATION EDUCATION PROGRAMS SCHEDULE OF EVENTS

Environmental Conference for the Meat & Poultry Industry
Co-located at the International Production and Processing Expo (IPPE)
February 27-28, 2020
Atlanta, GA

Worker Safety Conference for the Meat & Poultry Industry
Co-located at the International Production and Processing Expo (IPPE)
February 28-29, 2020
Atlanta, GA

Annual Meat Conference
March 2-4, 2020
Nashville, TN

Advanced *Listeria monocytogenes* Intervention and Control
April 22-23, 2020
Kansas City, MO

Meat Industry Food Safety Conference
September 9-10, 2020

For more information on these programs, please visit the events page at www.meatinstitute.org.

CURRENT FOUNDATION RESEARCH PROJECTS

How Does Analytic Approach Impact Pathogen Population Structure When Analyzing Whole Genome Sequence Data?, University of Minnesota, IBM

The overall goal of this project is to support an accurate, reproducible, transparent and uniform approach to whole-genome sequence analysis for purposes of outbreak detection and pathogen surveillance. The overarching objective is to demonstrate how different analytic approaches to whole-genome sequence analysis can impact analysis results.

Research funded in part by the Beef Checkoff.

Effects of Red Meat Consumption on Gut Microbiota in Young Adults, Purdue University, University of Colorado

Gut microbiota are an important contributor to human metabolic health and the impact of animal-based foods, unprocessed and processed red meat in particular requires investigation. Results from a recent study with rats suggest that consuming processed vs. unprocessed red meats may differentially influence gut microbiota profile. This project intends to determine the effect of unprocessed and processed red meat on gut microbiota.

Research funded in part by the Beef Checkoff.

Meat as a First Solid Food on Risk of Overweight and Neurodevelopment in Infants, University of Colorado Anschutz Medical Campus, University of Colorado Denver

Early complementary feeding is a unique and malleable period to prevent rapid weight gain and later obesity, and is also a critical phase for neurodevelopment. Meat is an excellent source of high-quality protein and micronutrients, which are critical for the normal development of older infants. This research will conduct a randomized controlled trial to comprehensively evaluate the effect of meat on growth, body composition, risk of overweight and neurodevelopment, with a protein intake at the reported population median. Findings from this study will be generalizable and help inform future dietary guidance.

Research funded in part by the Beef Checkoff.

Pathogen Growth in Alternatively Cured Ham and Bacon during Cooking, Cooling, and Process Deviations, Iowa State University and Smithfield Foods

The overall goal of the project is to determine the inhibitory effect of nitrite from a natural source (i.e., pre-converted celery juice powder) in processed meat products with a natural label during “real world” cooking and chilling procedures, which often include instances of process deviation, as well as non-continuous cooling.

CURRENT FOUNDATION RESEARCH PROJECTS (CONT.)

Validating Growth Models for *Clostridium perfringens, Clostridium botulinum*, and *Bacillus cereus* during Cooling of Uncured Meat and Poultry Products, University of Wisconsin

This project will develop data to determine the validity of the revised Option 2 cooling guidelines for uncured meat products, specifically to determine if Phase 1 cooling (from 120 to 80°F) can be extended from the currently outlined 1 hour limit. Uncured turkey breast meat will be used in the model.

Research funded in part by the Beef Checkoff, Beef Industry Food Safety Council, and the U.S. Poultry and Egg Association.

Tests of *Salmonella* Sub-unit Proteins as Vaccines for Broiler Chickens, USDA-ARS U.S. National Poultry Research Center

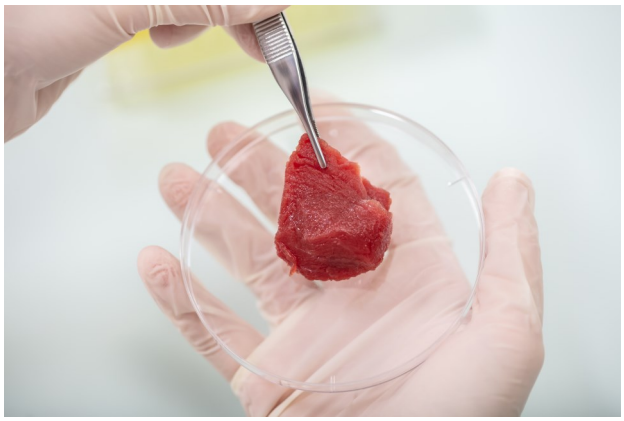
This project will identify the Salmonella protein antigens that are able to induce humoral immune response in broilers, and consequently these antibodies can prevent *Salmonella* colonization in the broiler gastrointestinal tracts.

Validation of Post-Harvest Antimicrobial Interventions to Control *Salmonella* on Market Hog Carcass Surfaces and Pork Products, Kansas State University

This study will validate the efficacy of lactic acid, sulfuric acid sodium sulfate, bromine, 180°F water, and peracetic acid as post-harvest interventions against *Salmonella*, as well as the impact on product color attributes, on pork carcasses and trim.

Research Priority Setting Meeting for Certain By-Products

There is limited research on the impact of rendering on foodborne pathogens, particularly with the implementation of the Food Safety Modernization Act. The Foundation will work with allied stakeholders in the rendering, pet food and cosmetic industries throughout North America to assemble a meeting where industry standards can be discussed to better inform future research priorities and projects. There is a dearth of critical parameters for this type of research.



2019 FOUNDATION CONTRIBUTORS

The Foundation is supported through generous contribution of companies and individuals. Company names with an asterisks indicate NAMI Board of Directors companies participating in the 2019 Chairman's Challenge to achieve 100 percent support from the Board.

A to Z Portion Control Meats, Inc.
Agri Beef Co.*
Alaska Sausage*
Allen Brothers
American Foods Group*
Birko Corporation*
Boar's Head Provisions Co., Inc.*
Bob Evans Farms*
Broadleaf USA Inc.*
Brown Packing Co., Inc.*
Brush Meat Processors
Bush Brothers*
Cargill, Inc.*
Catelli Brothers, Inc.*
Caviness Packing*
Central Valley Meat Co., Inc.*
Certified Meat Products*
Clemens Food Group*
Coast Packing Company*
Consumers Packing Co.
Costco Wholesale Meats*
CTI Foods*
Dietz and Watson*
empirical foods*
Evergood Sausage Company
FPL Foods*
Fred Usinger, Inc.*
Glier's Meats
Greater Omaha Packing Co. Inc.*
Harris Ranch Beef*
Hormel Foods Corporation*
Independent Meat Company*
Indiana Packers Corporation*
Interbay Food Company
Jensen Meats*
Jones Dairy Farm*
JTM Provisions*
Kayem Foods, Inc.*
Kenosha Beef International*
Kessler's Inc.*
Keystone Foods
Koegel Meats
Lopez Foods*
Los Banos
Maple Leaf Foods, Inc.*
Meats by Linz
Minat Holdings*
National Beef Packing Co., LLC*
North Country Smokehouse
Nueske's Applewood Smoke Bacon*
OSI Industries, LLC*
P.G. Molinari & sons, Inc.
Perdue Premium Meat*
Premium Iowa Pork LLC
ProPortion Foods LLC
Quality Processing Services
Salm Partners*
Seaboard Foods*
Sigma *
Smith Provision Co. Inc.
Smithfield Foods*
Sonoma County Meat Co.
Strassburger Meats, LLC*
Strauss Brands, Inc.*
Superior Farms*
Surlean Foods*
Swaggerty Sausage Co. Inc.*
The Taylor Provisions Co.
Treif USA Inc.*
Triumph Foods*
Uncle Charley's Sausage*
Unibright Foods
VPP Group LLC
Wasatch Meats Inc.*
Bill Westman
Yosemite Meat Co. Inc.

** NAMI Board Member*

RESEARCH ADVISORY COMMITTEE

Aaron Asmus, Hormel Foods Corporate Services, LLC
Laura Bachmeier, National Pork Board
Doug Beach, Tyson Foods
Sharon Beals, CTI Foods
Angel Besta, Greater Omaha Packing Co., Inc.
Chris Bodendorfer, Johnsonville Foods LLC
Peter Bodnaruk, Tyson Foods, Inc.
Melissa Bonorden, Hormel Foods Corporation
Marisa Boss, Boar's Head Provisions
Ann Brackenridge, Cargill, Inc.
Ted Brown, Cargill, Inc.
John Butts, Land O'Frost, Inc.
Mandy Carr, National Cattlemen's Beef Association
Trevor Caviness, Caviness Beef Packers Ltd
Kathy Cedillo, Greater Omaha Packing Co., Inc.
Kristin Clemmer, Fresh Mark
Sarah Collins, Tyson Foods
Jorge Correa, Canadian Meat Council
Jeff Cromer, AB Foods, LLC
Noel Dcruz, Tyson Foods
Mike DeCesare, Daniele, Inc.
Robert Delmore, Colorado State University
Jim Dickson, Iowa State University
Warren Dorsa, Smithfield Foods
Tom Edrington, Diamond V
Bill Eisel, Fresh Mark
Adalia Espinosa, Jack Links Beef Jerky
Mike Forbes, Hormel Foods Corporation
Tim Freier, Mérieux NutriSciences
Christian Fuchs, Maple Leaf Consumer Foods
Kerri Gehring, Texas A&M University
Devin Gredell, Tyson Fresh Meats Inc.
Katie Hanigan, Smithfield Foods
Barry Hays, Sigma
Matt Henderson, Land O'Frost, Inc.
Joe Holt, OSI Group, LLC
Kari Houchens, American Beef Packers, Inc.
Randy Huffman, Maple Leaf Foods Inc.
Susan Jaax, Cargill, Inc.
Collette Kaster, American Meat Science Association
Mohammad Koohmaraie, IEH Laboratories & Consulting Group
Mark Kreul, In-N-Out Burger
John Luchansky, Agricultural Research Service, USDA
Mike Luczynski, Boar's Head Provisions Co., Inc.
Deidrea Mabry, American Meat Science Association
Eunice Mah, Mérieux NutriSciences
Daniel Mallin, Tyson Foods
Michael Martin, Cargill, Inc.
Brenden McCullough, National Beef Packing Co. LLC
Shalene McNeill, National Cattlemen's Beef Association
Patrick Mies, National Beef Packing, Co. LLC
Andrew Milkowski, University of Wisconsin
Molly Miller, Tyson Foods
David Miniat, Miniat Holdings
Ali Mohseni, American Foods Group
Cynthia Moore, Tyson Foods
Kevin Myers, Hormel Foods Corporate Services, LLC
Nandini Natrajan, Keystone Foods LLC
Debbie Nece, Cargill, Inc.
Petri Papinaho, Jennie-O Turkey Store
Ken Petersen, OSI Group
Jerri Lynn Pickett, Tyson Foods, Inc.
Curtis Pittman, Harris Ranch Beef Company
Jacqueline Schulz, Kraft Heinz Company
Karen Shank, Tyson Foods
Kyle Swigart, Kraft Heinz Company
Rachel Tesconi, Independent Meat Company
Erin Thacker, Smithfield Foods
Hilary Thesmar, Food Marketing Institute
Wendy Watkins, Hormel Foods Corporation
Tommy Wheeler, Agricultural Research Service, USDA
Martin Wiedmann, Cornell University
Amanda Wilder, Boar's Head Provisions
Stephanie Wilkins, Mérieux NutriSciences
Amanda Wojtowicz, US Foods
Diane Wood, Maple Leaf Consumer Foods
Janice Wynn, Harris Ranch Beef Company
Michelle You, Home Market Foods

FOUNDATION FOR MEAT & POULTRY RESEARCH & EDUCATION