

FOUNDATION FOCUS



2020-2021 REQUEST FOR PROPOSALS RELEASED

The Foundation released its annual request for proposals in early July. The research priorities were developed by the Foundation's [Research Advisory Committee](#) and represent immediate research needs for Foundation funding. Proposals were invited in the areas of meat and poultry food safety; product quality; and nutrition sciences.

Examples of research priorities in each topic area follow.

[Meat and Poultry Food Safety:](#)

- Develop economically viable strategies for cattle and hogs pre-harvest interventions including changes in production practices and novel feed additives.
- Evaluate common production processes used during the production of uncured meat and poultry products to better understand the appropriate lethality and cooling.
- Identify the combination of virulence factors that cause human illness in pathogenic *Salmonella*, *Listeria* or *E. coli*.
- Evaluate factors that would allow bacterial pathogens (STEC, *Listeria* and *Salmonella*) to live and thrive in different processing environments including slaughter to raw processing.

[Product Quality:](#)

- Evaluate the ability and reliability of online (rapid, automated) instruments to predict quality traits including tenderness, color stability, flavor, etc.
- Evaluate the effect of different interventions alone or in combination with different types of packaging methods on the microbial ecology of different products in relation to storage life, discoloration and product quality.
- Investigate any changes in consumer attitudes towards meat items following the COVID-19 outbreak.

[Nutrition Sciences:](#)

- Risk-benefit analysis on the consumption of minimally and further processed meat and poultry products as a component of a healthy diet and lifestyle.
- Conduct menu modeling demonstrating the role of minimally and further processed meat and poultry products in the healthy dietary patterns identified in the 2020-2025 Dietary Guidelines.

The complete set of research priorities for each topic area and proposals information are available in the provided links.

- [Product Quality](#) proposals are due August 3, 2020.
- [Nutrition Sciences](#) proposals are due August 5, 2020.
- [Food Safety](#) proposals are due August 12, 2020.

Contact [Susan Backus](#) or [KatieRose McCullough, Ph.D., MPH](#) with any questions.

2020 RESEARCH ADVISORY COMMITTEE LISTING

The Foundation's Research Advisory Committee (RAC) develops meat and poultry research priorities which serve as the basis for the Foundation's research agenda and also communicates the areas of greatest research needs to the government, public and interested stakeholders. The RAC is made up of four subgroups across minimally processed (fresh) meat and poultry safety, further processed meat and poultry safety, nutrition sciences and product quality.

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^R – Research Advisory Committee

^P – Minimally Processed Pork Safety Subgroup

^B – Minimally Processed Beef Safety Subgroup

^{FP} – Further Processed Meat and Poultry Safety Subgroup

^{CT} – Minimally Processed Poultry Safety Subgroup

^Q – Product Quality Subgroup

^N – Nutrition Sciences Subgroup

2019 FOODNET DATA RELEASED

In late April, the Centers for Disease Control and Prevention (CDC) released a Morbidity and Mortality Weekly Report with surveillance data from FoodNet, the Foodborne Diseases Active Surveillance Network. The full report can be found [here](#).

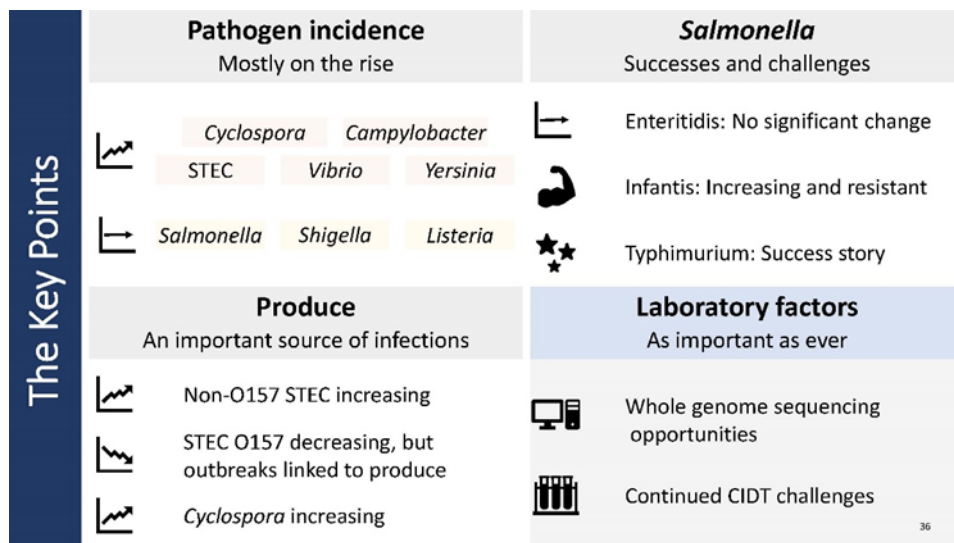
FoodNet monitors the incidence of laboratory-diagnosed infections caused by eight pathogens transmitted commonly through food at 10 U.S. sites, covering approximately 15% of the U.S. population (an estimated 49 million persons in 2018). During 2019, FoodNet identified 25,866 cases of infection, 6,164 hospitalizations, and 122 deaths.

According to CDC, preliminary surveillance data from 2019 “indicate that progress in controlling major foodborne pathogens in the United States has stalled. Incidence of infections caused by *Campylobacter*, *Cyclospora*, Shiga toxin-producing *E. coli* (STEC), *Vibrio*, and *Yersinia* increased and those caused by *Listeria*, *Salmonella*, and *Shigella* remained unchanged, compared with 2016–2018.”

The data also found chicken is an important source of *Salmonella* infections. Because *Salmonella* serotype Typhimurium infections declined after widespread vaccination of chickens against this serotype, some investigators think targeting other serotypes through poultry vaccination could be a way to reduce human illnesses.

The report noted that increased use of culture-independent diagnostic tests (CIDT) may be driving up the number of identified infections but that this does not account for the lack of progress in reducing foodborne illness.

CDC recommends broader implementation of known prevention measures and new efforts to target particular pathogens and serotypes. This includes interventions to reduce *Salmonella* and *Campylobacter* in chicken and to reduce contamination of vegetables and fruits consumed raw.



BOARD APPROVES RESEARCH RECOMMENDATIONS

The Foundation's Board of Directors approved an ambitious research agenda for 2020. The following research projects were approved and contracted. These projects represent nearly \$700,000 in research funding.

Using Whole Genome Sequencing to Evaluate Short- and Long-Term Genetic Variation Of Shiga Toxin-Containing *Escherichia coli* O157:H7 in Cattle to Improve Interpretations of Isolate Relatedness in Outbreak Investigations, USDA-ARS-Meat Animal Research Center

Funded by the Beef Checkoff

Effects of Proportioning Meat and Plant-Based Protein-Rich Foods Within the U.S. Healthy Eating Pattern on Cardiovascular Disease Risk Factors, Purdue University

Funded by the Beef Checkoff and Foundation

Improving Validation Methods for *Salmonella* Lethality on the Surface of Multiple Impingement-Cooked Meat and Poultry Products, Michigan State University, University of Wisconsin

Funded by the Beef Checkoff, Foundation and Pork Checkoff

Validation of a Novel Method for the Detection of Select *Salmonella* Serovars in Raw Meat Enrichments, USDA-ARS-Meat Animal Research Center

Funded by the Beef Checkoff, Foundation and Pork Checkoff

Efficacy of Common Antimicrobial Interventions At and Above Regulatory Allowable Pick Up Levels, Texas Tech University

Funded by the Beef Checkoff

Using Rapid Evaporative Ionization Mass Spectrometry (REIMS) as a Novel, Minimally Invasive, Real Time Method for Characterization of Metabolic Variation Contributing to Flavor, Tenderness, and Color Stability of Beef, Texas Tech University, USDA-ARS-Meat Animal Research Center

Funded by the Foundation

Projects are funded by industry contributions to the Foundation and through collaborative efforts with the Beef Checkoff and Pork Checkoff. "Working together with our industry partners ensures this critical research is implemented," noted Susan Backus, Foundation President. "We hope these partnerships continue so that we are able to further leverage our resources to benefit our shared interests." The Foundation is a contractor to the Beef Checkoff to administer research on post-harvest beef safety and processed beef nutrition.

Detailed information on the projects will be made available in future newsletters.

FSIS PROPOSES EXPANDING STEC TESTING TO ADDITIONAL RAW BEEF PRODUCTS

The Food Safety and Inspection Service (FSIS) published a [Federal Register](#) notice announcing it plans to expand routine verification testing to include the six non-O157 STECs (O26, O45, O103, O111, O121, or O145), in addition to *E. coli* O157:H7, to ground beef, bench trim, and raw ground beef components other than raw beef manufacturing trimmings. Currently, FSIS tests only beef manufacturing trimmings for these six non-O157 STECs and *E. coli* O157:H7. The agency also intends to test for these non-O157 STECs in retail ground beef and imported raw beef products. The notice includes a cost benefit analysis and responses to earlier comments on the intended expansion. FSIS invited public comments on the notice, which are due by September 3, 2020.

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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.)

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.

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.



FOUNDATION SHARES INFORMATION ON FOODBORNE PATHOGENS DURING GRILLING SEASON

The Foundation for Meat and Poultry Research and Education's Senior Science Advisor, KatieRose McCullough, Ph.D., MPH, presented on the May 13 webinar "[Protein Power Hour: Home Grilling #AloneTogether.](#)" The webinar, coordinated by the Partnership for Food Safety Education, featured meat and poultry safety experts sharing information on meat and poultry related outbreaks. Dr. McCullough's presentation focused on common foodborne pathogens to look out for during grilling season. The Foundation's research addressing post-harvest beef safety and outreach to food safety practitioners and educators on behalf of the Beef Checkoff was highlighted at the end of the presentation. The recorded webinar is available on the Partnership's [website](#).

THANK YOU TO THE FOUNDATION'S 2020 CONTRIBUTORS

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