

AUTHORIZATION REQUEST FOR FY 2019

CBB Budget Category: **Research**

Name of Contractor: **Foundation for Meat and Poultry Research and Education**

Name of Organization Subcontracting:

Start Date: **10/1/2018**

End Date: **9/30/2020**

BPOC Approved AR Extension Date: **9/30/2022**

AR OVERVIEW

AR Description:

The strategies and tactics described in this authorization request (AR) support the CBB budget category for research. Detailed descriptions for post-harvest beef safety and processed beef nutrition research and education and outreach are included in the following sections. Around the world, consumers of U.S. beef demand high quality, safe and nutritious products. Beef safety and nutrition research play key roles in the dialogue with domestic and foreign consumers of U.S. beef as their protein choices expand and the demand for product information continuously increases. Effective communications must be science based. Disseminating science-based information and data to diverse audiences is a fundamental role in effective communication that will be filled through the programs outlined in this AR. Collaborative efforts will be utilized to ensure broad distribution and effective engagement with all stakeholders.

Cost of the AR:

Source of Funding	Direct Costs	Implementation	Total
CBB/BPOC Funding Request:	\$560,000	\$240,000	\$800,000
Federation of SBCs Funding Request: <i>(Informational Only)</i>	\$0	\$0	\$0
Other Funding Source(s): <i>(Informational Only)</i>	\$0	\$0	\$0
Total Cost	\$605 60,000	\$302 40,000	\$98 00,000

Long Range Plan Core Strategies Addressed by this AR *(Check all that apply)*

Grow Beef Exports	Consumer Trust	Protect & Enhance	Beef's Value Proposition
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Digital properties and target audience(s) addressed by this AR:

www.beefsafetyresource.com, in-plant food safety operators; nutrition scientists; key opinion leaders in food safety and nutrition science.

PROGRAM INFORMATION FOR THIS AR**Tactic A**

Tactic Name: *Post-harvest Beef Safety Research, Knowledge Dissemination and Stakeholder Engagement*

Tactic Description:

Current levels of pathogen contamination on beef remain relatively low yet there continue to be improvements in its safety profile. [FSIS sampling results](#) show a reduction in the prevalence of Shiga toxin-producing *Escherichia coli* (STEC) O157:H7 contamination on raw ground beef from 0.19% in 2012 to 0.09% percent in 2017. Over the same five-year period, the prevalence rate of targeted STEC in ground beef components decreased from 1.48 percent to 0.56 percent positive. For the period from April 1, 2017 to March 31, 2018, [FSIS sampling results](#) of raw ground beef components show *Salmonella* contamination at 5.3 percent and at 2.3 percent in raw ground beef. Contamination of ready-to-eat meat and poultry, which is not broken out by species, by *Listeria monocytogenes* has remained relatively steady at less than one-half of one percent over the last few years. This five-year snapshot demonstrates that research can be conducted, disseminated and implemented to effect meaningful change in a brief period of time. The data shows that post-harvest, multiple hurdle beef safety interventions and other process controls are effective in reducing the prevalence of pathogenic bacteria. However, the threat posed by pathogens is not static, rather it is constantly emerging and antimicrobial interventions and other process controls must be constantly upgraded to address these emerging threats. Without these continuous improvements, incident levels would have most likely increased. Many of the interventions and process controls now used in the beef industry are the result of checkoff funded research and continued investment is necessary for further improvement.

Illnesses attributed to STEC O157 have been reduced over the last 10 years according to the [Centers for Disease Control and Prevention 2017 FoodNet report](#). However the report notes the STEC illness increased by 28% when comparing 2017 to 2014-2016 data. The incidence of illnesses attributed to *Salmonella* and *Listeria* have remained relatively unchanged for the past several years at 16 cases per 100,000 population and

0.3 cases per 100,000 population respectively. The Interagency Food Safety Analytics Collaboration (IFSAC) released [foodborne illness attribution estimates for 2013](#) in late 2017. IFSAC used outbreak data to update previous analyses to estimate which foods are responsible for illness related to *Salmonella*, *Escherichia coli* O157, *Listeria monocytogenes*, and *Campylobacter*. The report noted that *Salmonella* illnesses came from a wide variety of foods and *E. coli* O157 illnesses were most often linked to vegetable row crops and beef.

In late July, the Centers for Disease Control and Prevention released the [Surveillance for Foodborne Disease Outbreaks — United States, 2009–2015](#). During this time period, 5,760 outbreaks were reported that resulted in 100,939 illnesses, 5,699 hospitalizations, and 145 deaths. Thirty (30) percent of outbreak-associated illnesses were caused by *Salmonella*. In total, outbreaks caused by *Listeria*, *Salmonella*, and Shiga toxin-producing *Escherichia coli* (STEC) were responsible for 82 percent of all hospitalizations and 82 percent of deaths reported.

The economic burden of illness is another factor in the costs associated with pathogen contamination. According to the [U.S. Department of Agriculture's Economic Research Service](#), illnesses attributed to *Salmonella* cost \$3.6 billion, STEC (non-O157 and O157) cost nearly \$300 million, and *Listeria* costs \$2.8 billion in the 2013. These costs resulted from medical costs, lost productivity, and death. There are no acceptable levels for pathogenic organisms in beef products as evidenced by the level of foodborne illnesses in the United States. Because *Salmonella* is a significant source of illnesses, hospitalizations, deaths and related costs, research efforts focused on mitigating this threat in the beef supply will continue to be a key priority.

Another beef industry cost associated with pathogen contamination is the reduced value of products testing positive. When a raw material or finished product tests positive for a pathogen, it cannot enter commerce unless it is thermally processed. If the product has already entered commerce, the product is subject to a recall. In both cases, a substantial reduction in value for the pathogen positive product and significant recall costs are incurred by the packer or processor.

The total costs of safety interventions and processes, medical and missed opportunity claims, recalls and reduced value of contaminated products cannot always be passed on to consumers. Most often these costs are borne by the industry and eventually passed on to beef producers through reduced live cattle values. Accordingly, there is a direct economic incentive for beef producers to invest in beef safety research to further reduce pathogenic contamination levels in raw materials and finished products to increase the value of their cattle and their return on investment.

For the foregoing reasons, foundational, applied research is the focus in this program. Integrated communication and educational initiatives will ensure that the data collected are shared with targeted audiences for application across the processing sectors. Outreach with stakeholder groups will inform and impact collaborative research and communication programs addressing the safety of U.S. beef products.

The beef industry must consistently produce products that are wholesome and safe to maintain and bolster consumer trust and grow demand. International and domestic consumers must have confidence that the U.S. beef items they and their families consume are produced using the best processes available, which are supported by science-based research. The threats in the microbial environment are constantly evolving. It is imperative that the beef processing industry have access to the most up-to-date science-based research to mitigate both current and emerging threats. This tactic provides practical, science-based research that can be used by in-plant personnel and others to ensure the safety of the U.S. beef supply.

A standing advisory committee of industry and academic experts, including other contractors to the beef checkoff, and practitioners will establish research priorities and evaluate proposals. Based upon their recommendations, contracts are awarded based on merit and priority need. After the award, the research contracts will be closely monitored to ensure timely and complete research work products are available for distribution to the industry.

Measurable Objectives *(List at least three outcome-based objectives for this tactic):*

- Manage the execution of a minimum of three research projects addressing current knowledge gaps. Topics may include but are not limited to:
 - Antimicrobial interventions for use on fresh meats, variety meats, head and cheek meat, enhanced and ready-to-eat (RTE) products;
 - A review of factors for the beef industry to consider when evaluating regulatory whole genome sequenced isolates; and
 - Strategies for mitigating beef contamination or adulteration from non-pathogenic hazards, e.g. allergens, foreign materials, in a post-harvest commercial facility or supply chain environment.
- Facilitate the dissemination of research data and knowledge sharing through [4two](#) meetings, webinars, documents or other events targeted to safety professionals.
- Develop two tools (web content, reviews, fact sheets, videos, etc.) that share post-harvest research results or summarize research to provide guidance and information for small and very small beef processing facilities including mobile slaughter units.

LRP Strategic Initiatives Addressed by this Tactic (Check all that apply)

Drive Export Growth	Grow Consumer Trust	Protect & Enhance Business Climate	Beef's Value Proposition
<input type="checkbox"/> Adopt traceability systems <input type="checkbox"/> Increase market access <input type="checkbox"/> Promote unique attributes of U.S. beef	<input type="checkbox"/> Ensure antibiotic stewardship <input type="checkbox"/> Certify & verify production practices <input checked="" type="checkbox"/> Ensure beef safety <input checked="" type="checkbox"/> Protect beef's image <input type="checkbox"/> Engage beef advocates	<input type="checkbox"/> Research & innovate new production tech. <input type="checkbox"/> Ensure beef's inclusion in dietary recommendations <input type="checkbox"/> Motivate producers & stakeholders to engage <input type="checkbox"/> Develop crises management plans <input type="checkbox"/> Attract, develop & enable the next generation <input type="checkbox"/> Defend beef's product identity	<input type="checkbox"/> Revolutionize beef marketing & merchandising <input type="checkbox"/> Measure & improve sustainability <input type="checkbox"/> Research & communicate beef's nutritional benefits <input type="checkbox"/> Connect & comm. with consumers <input type="checkbox"/> Improve product & production efficiency

Committee(s) to Score this Tactic (Check all that apply)

Consumer Trust	Export Growth	Innovations	Nutrition & Health	Safety	Investor Relations	Mkt. Research
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tactic B

Tactic Name: *Science-Based Research on the Nutritional and Health Benefits of Processed Beef, Knowledge Dissemination and Stakeholder Engagement*

Tactic Description:

All meat is processed to varying degrees. This can include any meat product produced via the physical or biochemical transformation of meat from its native form (i.e. carcass, wholesale cut) into a final or finished product deemed desirable by consumers.

For this purpose, the definition of further processed, as defined by the American Meat Science Association Meat Science Lexicon, will serve as the definition of processed meat.

Further Processing: Any process where meat products undergo a transformation, beyond minimal processing, containing approved ingredients, and may be subjected to a preservation or processing step(s) through the application of salting, curing, fermentation, thermal processing (smoking and/or cooking), batter/breading, or other processes to enhance sensory, quality, and

safety attributes. These products may include ready-to-cook and ready-to-eat products.

Processed beef products can fit easily into healthy meals. Products such as marinated beef fajita strips and beef dinner sausage can be center of the plate food items joining vegetables and grains which together can lead to greater nutrition and nutrient absorption. Deli roast beef can easily be incorporated into a sandwich or as a salad topping for a healthy meal. Menu models have demonstrated how these processed products fit in a dietary pattern.

Research conducted within this tactic will provide scientific evidence to support the beef industry's ability to produce, market and maintain the public enjoyment of processed beef products as a convenient, affordable and safe source of high quality protein. While the scope of processed beef products is broad in general, specific product types will be selected for research. These products may include, but are not limited to, beef jerky, beef snack sticks, deli beef products, beef hot dogs and beef sausages. Through science-based research, the role of processed beef products in a healthy, well-balanced diet will be defined. Data collected will be shared with key nutrition opinion leaders, regulatory authorities and all stakeholders.

Promoting processed beef products is critical to the bottom line of producers. A major component of many ready-to-eat and ready-to-cook processed beef items is 50 percent chemical lean (CL) beef trim. Approximately 10 percent of the weight of a fed steer carcass ends up as 50 percent CL trim, which is essentially, the largest "wholesale cut" on the beef carcass. Accordingly, the market value of the 50 percent CL trim, like the cut-out values of whole muscle cuts, directly affects live cattle prices. By creating demand for processed beef items, demand is created for 50 percent CL, which in turn bolsters live cattle prices and ROI for producers. That's why promoting this growing market segment impacts cattle prices.

A number of significant challenges face the processed beef category and are rooted in the same dogma—limit the consumption of red and processed meat for optimum health. The process to develop the 2020-2025 *Dietary Guidelines for Americans (Guidelines)* process is underway. During the 2015-2020 *Guidelines* process, nutritional experts questioned whether red and processed meat consumption are part of a "healthy" dietary pattern which ensure positive health outcomes and a sustainable environment. In March 2018, the International Agency for Research on Cancer (IARC) published the monograph declaring processed meats and red meats as carcinogenic agents. IARC is an authoritative body and this monograph can be included as support for federal or state polices or regulations. The World Cancer Research Fund's *Third Expert Report: Diet, Nutrition, Physical Activity and Cancer: a Global Perspective*, released in May 2018 is another challenge. The Report's [Cancer Prevention Recommendations](#) include "limit red and processed meat – eat no more than moderate amounts of red meat, such as beef...eat little, if any, processed meat." Together, these findings continue to call into question whether red and processed meat can be included in a healthy diet. This tactic directly addresses these challenges with science-based research.

According to the [International Food Information Council Foundation's 2018 Food and Nutrition Survey](#), 80 percent of consumers say they encounter a lot of conflicting information about what to eat or avoid. An opportunity exists to show how all foods can fit into a healthy, balanced diet so that individual foods or nutrients are not condemned by an “optimal dietary pattern” that is unlikely to reflect the reality of how people live today.

By demonstrating how processed beef products fit in a healthy dietary pattern associated with positive health outcomes, the conversation can be turned towards how these products can contribute to overall health and well-being and away from the focus on negative health outcomes. Research findings will be critical to ensure processed beef remains in the 2020-2025 *Dietary Guidelines for Americans*. Every opportunity will be pursued to submit scientific research to add to the body of evidence in support of this effort.

A standing advisory committee of industry and academic experts, including other contractors to the beef checkoff, and practitioners will establish research priorities and evaluate proposals. Based upon their recommendations, contracts are awarded based on merit and priority need. After the award, the research contracts will be closely monitored to ensure timely and complete research work products are available for distribution to the industry.

This tactic is focused on processed beef. If complementary research with other meat animal species is developed, they will be expected to contribute proportionally to the research funding.

Measurable Objectives (*List at least three outcome-based objectives for this tactic*):

- Manage the execution of a minimum of 3 research projects addressing current knowledge gaps. Topics may include:
 - Menu modeling and other analyses to demonstrate that processed beef items can be a component of the dietary pattern recommended by the *Dietary Guidelines for Americans*;
 - Comprehensive white paper(s) to assess what is currently known and any potential data gaps on the mechanistic development of cancer in humans for processed beef product components; and
 - Risk-benefit analysis on the consumption of processed beef products as a component of a healthy diet and lifestyle.
- Facilitate the dissemination of research data and knowledge sharing through ~~two~~^{three} (3) meetings, webinars, documents or other events targeted to nutrition and beef industry professionals, key opinion leaders, registered dietitians, healthcare professions and retail influencers.

- Develop two tools (web content, infographics, reviews, fact sheets, videos, etc.) that substantiates processed beef product’s role in a healthy, sustainable diet and active lifestyle. Tools will be targeted to registered dietitians, healthcare professions, retail influencers, nutrition and beef industry professionals and key opinion leaders.

LRP Strategic Initiatives Addressed by this Tactic *(Check all that apply)*

Drive Export Growth	Grow Consumer Trust	Protect & Enhance Business Climate	Beef’s Value Proposition
<input type="checkbox"/> Adopt traceability systems <input type="checkbox"/> Increase market access <input type="checkbox"/> Promote unique attributes of U.S. beef	<input type="checkbox"/> Ensure antibiotic stewardship <input type="checkbox"/> Certify & verify production practices <input checked="" type="checkbox"/> Ensure beef safety <input checked="" type="checkbox"/> Protect beef’s image <input type="checkbox"/> Engage beef advocates	<input type="checkbox"/> Research & innovate new production tech. <input checked="" type="checkbox"/> Ensure beef’s inclusion in dietary recommendations <input type="checkbox"/> Motivate producers & stakeholders to engage <input type="checkbox"/> Develop crises management plans <input type="checkbox"/> Attract, develop & enable the next generation <input type="checkbox"/> Defend beef’s product identity	<input type="checkbox"/> Revolutionize beef marketing & merchandising <input type="checkbox"/> Measure & improve sustainability <input checked="" type="checkbox"/> Research & communicate beef’s nutritional benefits <input type="checkbox"/> Connect & comm. with consumers <input type="checkbox"/> Improve product & production efficiency

Committee(s) to Score this Tactic *(Check all that apply)*

Consumer Trust	Export Growth	Innovations	Nutrition & Health	Safety	Investor Relations	Mkt. Research
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUPPLEMENTAL INFORMATION FOR THIS AR

1. Will all work detailed in this AR be completed by the end of the fiscal year?

No

If not, please provide an explanation.

This is a two year AR and work will be completed by September 30, 2020.

2. Please explain changes from FY 2018 approved AR:

Including additional areas of potential research based on industry recall events and knowledge gaps.

Including research on the nutritional content and contributions of processed beef items and their role in a healthy diet and active lifestyle.

Including research on ensuring processed beef items are included in the 2020-2025 DGA.

3. List any proposed subcontractor/agencies that will be used to complete the work in this AR.

To be determined

4. Will all work with subcontractors be competitively bid?

No

If not, why not?

Work will be awarded through a RFP process and evaluation of research proposals by a standing committee comprised of industry and academic food safety and nutrition practitioners.

5. Please list any relationships between this AR and projects previously funded by the Operating Committee:

The Foundation for Meat and Poultry Research and Education and the North American Meat Institute previously administered post-harvest beef safety research through ARs # 1405, 1504, 1603 and 1705. FMPRE currently administers post-harvest beef safety research through AR # 1811.

DETAILED BUDGET SUMMARY

CBB/BPOC Funding Request:

Committee	Tactic	Tactic Name	Funding Source	Direct	Implementation	Total
Safety	A	Post-harvest beef safety research	BPOC	\$ 290,000	\$ 160,000	\$ 450,000
Safety	B	Science-based research on the nutritional and health benefits of processed beef	BPOC	\$ 270,000	\$ 80,000	\$ 350,000
AR Totals				\$ 560,000	\$ 240,000	\$ 800,000

Federation of SBCs Funding Request: (Informational Only)

Committee	Tactic	Tactic Name	Funding Source	Direct	Implementation	Total
Safety	A	Post-harvest beef safety research	Federation			\$ -
Safety	B	Science-based research on the nutritional and health benefits of processed beef	Federation			\$ -
AR Totals				\$ -	\$ -	\$ -

Other Funding Source(s): (Informational Only)

Committee	Tactic	Tactic Name	Funding Source	Direct	Implementation	Total
Safety	A	Post-harvest beef safety research				\$ -
Safety	B	Science-based research on the nutritional and health benefits of processed beef				\$ -
AR Totals				\$ -	\$ -	\$ -

Total Cost Summary for All Funding Sources: (Informational only)

Committee	Tactic	Tactic Name	Funding Source	Direct	Implementation	Total
Safety	A	Post-harvest beef safety research	All	\$ 290,000	\$ 160,000	\$ 450,000
Safety	B	Science-based research on the nutritional and health benefits of processed beef	All	\$ 270,000	\$ 80,000	\$ 350,000
AR Totals				\$ 560,000	\$ 240,000	\$ 800,000

Summary of Prior Year Budget:	FY 2018 Approved Budgets						
	CBB/BPOC	FSBCs	Other Source(s)	Total	Direct Cost	Impl.	Total
AR Total	\$ 500,000	\$ -	\$ -	\$ 500,000	\$ 300,000	\$ 200,000	\$ 500,000

Summary of Prior Year Actual Expenses:	FY 2018 Actual Expenses (through May 30, 2018)						
	CBB/BPOC	FSBCs	Other Source(s)	Total	Direct Cost	Impl.	Total
AR Total	\$ 119,465	\$ -	\$ -	\$ 119,465	\$ 43,722	\$ 75,743	\$ 119,465

Historical Summary of Budgets and Expenses	Total Approved Budgets			Total Actual Expenses		
	FY 2017	FY 2016	FY 2015	FY 2017	FY 2016	FY 2015
AR Total	\$ 500,000	\$ 500,000	\$ 400,000	\$ 334,484	\$ 478,991	\$ 393,147