American Meat Science Association

August 14, 2023

To: National Institute of Food and Agriculture (NIFA)

From: Collette Kaster, CEO, American Meat Science Association

Re: Justification for inclusion of Meat Quality Research Funding in AFRI Program Areas

The American Meat Science Association (AMSA) is an individual membership organization of more than 2000 meat scientists representing major university research and teaching institutions, meat processors and companies that supply meat to others in the United States and internationally. Our members conduct basic and applied research and offer education programs in muscle growth and development, meat quality, food safety, nutrition, processing technology and consumer and marketing issues relevant to the international meat industry. Through our journal, Meat and Muscle Biology we publish and promote research to advance meat (defined as red meat (beef, pork and lamb), poultry, fish/seafood and meat from other managed species) as an important food source and an overall benefit to societies globally.

As emphasized recently in "The Societal Role of Meat – What the Science Says" in Animal Frontiers 13(2) April. 2023, meat provides important value to society through nutrition, livelihoods, and economies. The global meat industry is worth over $1 trillion and employs millions worldwide, while in the US, it generates $239 billion in income, supports 1.7 million jobs, and contributes $41 billion in taxes. The industry's strong demand projections and significant export market further enhance its economic value, benefiting both developed and developing countries. However, livestock production for meat faces numerous challenges that require a concerted research effort to increase efficiency and become more sustainable. As production practices evolve to meet this societal need, research to ensure meat quality meets consumer expectations is critical. For people to obtain the benefits of meat consumption, they must want to consume the products, which is why preserving and improving the quality of meat is essential. Thus, meat quality should be a component of all livestock and meat production and processing research.

Historically, NIFA-AFRI (Ag and Food Research Initiative) programs have been significant sources of funding support for meat science research and graduate training for future meat science leaders in industry, academia, and government. However, scientists and researchers in our membership are concerned with the recent trend of decreased opportunities in AFRI programs to obtain support for "meat quality" research over the past years. Previously, researchers in meat science often obtained funding from the **Food Quality** program in addition to **Animal Health and Production** and **Animal Products**.

In the Request for Application (RFA) for FY 2023-2024, in the area of **Animal Nutrition, Growth and Lactation** is this wording: "The effects of pre-harvest treatments (e.g., nutritional plane) on post-harvest product characteristics are appropriate for this program area program area (A1231)." It also explicitly outlines that projects addressing meat quality and production efficiency, as well as projects focusing on meat quality resulting from metabolic disorders, are permissible. However, this allowance applies *only* if these projects also encompass facets of animal nutrition, growth, or lactation. But then follows with "applications focused exclusively on post-harvest treatments and their effect on understanding of the chemical, physical, and biological properties of animal products or methods to improve the safety, quality, shelf-life, convenience, nutrient profile or sensory attributes of animal products, should be submitted to the **Novel Foods and Innovative Manufacturing Technologies** program area (A1364)."

When we review the Novel Foods and Innovative Manufacturing Technologies priorities (A1364), foods considered a priority are those foods or food ingredients that can be newly developed, produced or preserved using new technologies or processes including cell cultured meat, *seafoods and animal proteins*, plant protein products, edible insect proteins, single cell proteins, and other novel sources/varieties. This area will allow for some research opportunities but is very limited with this current language and recent interpretations of the priorities for novel foods have tended to exclude traditional meat products even when produced with novel ingredients or processes. And applications focused exclusively on post-harvest treatments intended to enhance the nutritional value of animal products through improved bioavailability of vitamins, minerals, and bioactive components should be submitted to the **Food and Human Health** program area (A1343).

The Novel Foods and Innovative Manufacturing Technologies program covers meat and seafood quality within its scope. This is contingent on these "foods or food ingredients" being freshly developed, produced, or preserved through novel technologies or processes. AMSA holds the perspective that the language within the RFA could be construed by meat and muscle biologists to imply that research endeavors concentrated solely on meat quality, as a primary objective, are not suitable for either of these two programs which could further be interpreted that researchers must be involved as collaborators on other projects rather than assuming the role of Principal Investigators. There is also a belief that the Animal Nutrition, Growth, and Lactation program's supplementary information might mislead applicants and reviewers by indicating the existence of a more fitting program area for general meat quality studies, which is, in fact, not the case. This misdirection unintentionally eliminates meat from consideration due to the stipulation that it must be "newly developed."

In terms of alternative program areas, applications aimed at enhancing food quality or nutritional value are directed towards the Food Safety, Nutrition, and Health program domain. The subject of food quality is exclusively highlighted in the Novel Foods and Innovative Manufacturing Technologies program, as outlined previously. Meanwhile, the concern of food waste, an aspect of great interest to numerous AMSA members, is solely addressed within the context of the Diet, Nutrition, and the Prevention of Chronic Diseases program. AMSA underscores the potential for the RFA's statement to lead applicants and reviewers astray regarding the continued existence of a program area dedicated to addressing food quality.

The A1201 Animal Breeding, Genetics, and Genomics Program Area Priority clearly states that "any target area identified in the USDA Animal Genome Blueprint" will be considered in this program. AMSA believes it would be helpful to state the goals set forth in the paper which include:

1. Providing nutritious food for a growing human population
2. Improving sustainability of animal agriculture
3. Increasing animal fitness and improving animal welfare
4. Meeting consumer needs and choices

To address these concerns, AMSA secured a grant from USDA-NIFA and organized a workshop to gather input from key scientists with demonstrable leadership experience in research to prioritize the meat quality research needs of the meat industry. In April of 2023, 35 scientists representing 22 universities, USDA-ARS, USDA-NIFA, and several industry partners convened to ideate, discuss, align, and prioritize how meat quality research needs fit into the broader picture of research needs of livestock production for meat. During the workshop, consumer expectations of meat palatability/quality underpinned all discussions as the ultimate the ultimate customer.

Research priorities identified at the workshop include: ensuring meat quality is maintained or improved while adapting livestock and processing practices to address the challenges of climate change and sustainability; food

waste; water/resource use; and food security. Topic areas include genetic selection, identify biomarkers, gene editing, beef on dairy crosses, product defect solutions, growth technologies, feeding strategies, methane inhibitors, time on feed/animal size, variety meat utilization, consumer preferences, co-grazing/small ruminant production, nutritional value of meat, microbiome, shelf-life, cold chain management, packaging, oxidation, automation, robotics, and artificial intelligence/machine learning.

AMSA is respectfully asking USDA-NIFA to recognize additional opportunities where meat quality fits into existing funding priority areas by adjusting language to accommodate the important research related to meat quality as described above. Suggestions offered by AMSA include:

Within **Animal Nutrition, Growth and Lactation** program area (1231)

> Under part c of the program priority change the language to "**Improving the <u>efficiency of production or quality</u> of meat, milk, egg, fish, and animal fiber.**"

Within **Novel Foods and Innovative Manufacturing Technologies** program area (A1364), we recommend the following statement be added to the Program Area Priority description.

> "NIFA requests proposals for research that develop risk-based approaches to ensure the quality, safety and nutrition of novel foods and food ingredients **or innovative manufacturing technologies to produce traditional foods which recognizes that the ingredients *and* the food or the technology do not all need be novel**."

In addition, research in several program areas could result in downstream impacts on meat quality that should be investigated. The AMSA would welcome the opportunity to further discuss how AFRI FY2024 program area priority language could be modified to accommodate more opportunities for funding meat quality research and ensure program managers, panel chairs and review panel members are aligned with this intent.

American Meat Science Association, its members, and our partners appreciate the consideration of this request for modification. We would be pleased to discuss this further at any time and look forward to sharing our upcoming Position Paper on Meat Science Research Priorities.