Thank you for the opportunity to discuss research priorities for the Foundation for Food and Agriculture Research (FFAR).

The American Society of Animal Science membership includes scientists who conduct fundamental research on the cellular and molecular biology of livestock to scientists who conduct on-farm research that results in immediate impacts.

After examining the FFAR target areas, ASAS recommends the following:

Sustainable agricultural systems must include enhanced resource use in **both animal and plant** efficiency and also must incorporate sustainability principles. Inclusion of animals within this target area will encourage collaborations to create integrated food production systems that will positively impact both agricultural and human interests.

Transforming soil health is an area in which the interaction between plants (crops, grasslands, pastures, range lands), animals, and the ecosystem can be investigated. These integrated systems will create interdisciplinary partnerships to conserve soil moisture, minimize soil erosion, and enhance soil organic matter, while reducing energy use and over application of nitrogen and phosphorus. Additionally, grazing animals are an important component of soil health.

The research priority of "enhancing sustainable farm animal productivity, resilience, and health." will enable collaborations across animal production sciences, veterinary sciences, and plant sciences benefiting both stakeholders and industry partners.

We recommend an additional research priority, which is to apply current and cutting-edge technologies to animal and plant production systems. Technologies are available in other industries that are not currently applied in agriculture. These technologies could make resource use more precise and efficient and are an excellent opportunity for academia and industry to build partnerships that would result in significant and timely impacts.

The target area of "better health through food", involves modifying the composition of animal-sourced foods to improve human health and is an area of research that falls outside the individual missions of the USDA and NIH. Genetic selection of superior animals or altering animal diet composition to enhance the quality of animal-sourced foods for human health are current areas of research for which little federal or private sector funding is available. Production and delivery of animal-sourced bioactive compounds to promote human health or prevent disease also require additional research.

Research is needed to understand how to strategically alter the gut microbiome of animals to increase production efficiency, reduce the amount of manure and greenhouse gases that are released into the environment, and control respiratory disease (the most costly disease in the cattle industry). A better understanding of how the microbiome of the gut and respiratory tract interacts with the host genome is also needed.

Collaborations between animal and social scientists are needed to understand the impacts of public perceptions regarding animal well-being in various animal production systems. For example, how consumers make decisions regarding their purchases of animal-sourced foods and

how animal well-being or animal production systems affect food consumption behaviors and human health are important interdisciplinary research areas that need further investigation.

Thank you on behalf of American Society of Animal Science for the opportunity to provide recommendations regarding future FFAR research priorities.