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Defining Animal Nutrition Research Priorities for a Healthy Society  
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Good morning. Thank you for that kind introduction and thank you for inviting me here to speak.

I am USDA's Chief Scientist and Under Secretary for Research, Education, and Economics (REE), where I coordinate the scientific research, education, and statistical programs across the Department.

At USDA, much of our research is focused on finding solutions to the unprecedented challenges facing the global food and agricultural system. These challenges include producing enough safe and nutritious food for a growing

population, adapting to a changing climate, and conserving our natural resources. As we celebrate the year of soils, we're very aware of the work that needs to be done to restore the quarter of the world's arable land to productivity – land that is currently considered to be severely degraded, as well as to maintain soil fertility long into the future

USDA is committed to addressing the grand societal challenges of food security, food safety, improving human health and nutrition, building the bioeconomy, and doing this in a way that is sustainable over the long-term and resilient to climate change. These are the priorities in the research done through both the intramural and extramural agencies at USDA, and each is a complex challenge that requires multi-faceted approaches to research.

I would argue our continued commitment to animal science research is more important now to the world than ever before. Indeed, the first sentence from a new report from the National Academy of Sciences says, "Reinvigorating animal agricultural research is essential to sustainably address the global challenge of food security."

But how do we sustainably produce enough safe, nutritious food while we are seeing a clear convergence of many of these challenges on the horizon?

Though they've always been interrelated, today, many health-, food- and natural resource-related issues are coming together to create "a perfect storm." And the connection is agriculture – our primary interface with the natural environment as we work to feed ourselves. The air we breathe, and the water and food we ingest are essential for life. Safe, nutritious food and clean, plentiful water depend on healthy, sustainable agricultural systems.

This "perfect storm" is also intensified by changing public values related to ethical treatment of animals coupled with an increased disconnect between an urbanized public and farming. And these issues are playing out against a backdrop of skyrocketing global demand for meat, poultry, eggs, and dairy products.

In a shrinking, interconnected world, with a growing population, serious challenges to this system show up at an ever faster rate. According to Centers for Disease Control (CDC), about 75% of recently emerging infectious diseases affecting humans are diseases of animal origin, and approximately 60% of all

human pathogens are zoonotic. Foods of animal origin can be vectors for transmission of these diseases.

That's why greater collaboration between human and animal health professionals is essential. USDA research plays a dual role in the protection of agriculture and public health, producing science-based answers for decision-making. We bring together expertise from animal science, veterinary medicine, food safety, nutrition, wildlife, plant science, economics, ecology, biotechnology and other agricultural and health disciplines to set priorities for our research programs. We've embraced the "One Health" approach, which recognizes that the health of humans is connected to the health of animals and the environment. And we're proud of the contributions our research has made to human and animal health, and directly to producers, consumers, and the environment.

Two current examples of this engagement are the Global Health Security Agenda and the President's Executive Order on Combatting Antibiotic Resistant Bacteria (CARB).

USDA, in partnership with the Department of Health and Human Services (HHS) and the Department of State together with countries around the world recently launched the Global Health Security -- an international initiative to address global health security.

While our main goals in the Global Health Security agenda are to slow the spread of antimicrobial resistance, reduce zoonotic disease transmission, establish national biosecurity systems, increase routine immunization, strengthen national infectious disease surveillance and laboratory systems, and develop real-time electronic reporting systems and emergency operations centers, USDA is pursuing the Global Health Security agenda in the context of our overall mission. That mission includes developing and preserving a sustainable global food and agriculture system. In support of global health security, USDA collaborates with U.S. Government agencies such as the HHS; the Agency for International Development (USAID); the Department of State; Department of Defense; and Department of Homeland Security, and international organizations such as the United Nations Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE), and the World Health Organization (WHO).

One previously mentioned major global health security challenge receiving considerable attention recently is the threat of antimicrobial resistance. There are many pathways among people, animals, and the environment connecting resident bacterial populations in one population or setting to those in other populations or settings. The One Health Working Group at USDA – composed of senior scientists from ARS, the Animal and Plant Health Inspection Service (APHIS) and the Food Safety and Inspection Service (FSIS) – have worked together on this issue for many years, each performing tasks – from research to monitoring to inspection - that supplement but do not duplicate the efforts of the other.

Despite these efforts, more work remains. The Federal government, including USDA, is elevating the priority of our work on antimicrobial resistance. The White House issued a National Strategy on Combating Antibiotic-Resistant Bacteria, which outlines steps the Federal government will take to improve prevention, detection, and control of resistant pathogens in the U.S. and worldwide. As part of the Task Force for CARB, USDA proposes to conduct surveillance; research and development; education, Extension, and outreach. We expect the President to announce his CARB plan soon.

The President's budget for 2016 is a strong statement in support of agricultural science in general, and animal science in particular. The budget includes:

- \$3.2B for the REE mission area
- \$125M increase in the Agriculture and Food Research Initiative (AFRI) -- from \$325M to \$450M. This increase includes funding for Antimicrobial Resistance Initiative under the AFRI Food Safety Challenge Area. It also includes funding for pollinator health, biobased feedstocks and enhancements to other important research, education, and Extension programming.
- \$80M for two new institutes to be part of the Administration's National Network for Manufacturing Innovation (NNMI)
- \$114M for Southeast Poultry Research Lab construction

USDA research must continue to promote the health of people, animals and our environment – nationally and globally – and to detect, prevent, prepare for, and respond to emerging diseases, pandemic threats and other issues at the human, animal and ecosystem interface. Now, more than ever, we need to reinforce our commitment to animal science, and to conduct that research in a socially-acceptable, ethical, and humane manner.

A recent news report made allegations about the treatment of animals at the U.S. Meat Animal Research Center (USMARC) at Clay Center, Nebraska, as well as about the value of the center's research. ARS does not agree with the way its treatment of animals was portrayed in the newspaper article. We have posted on the ARS website all of the reporter's inquiries, as well as our detailed responses – details which were largely missing in the subsequent reporting. I think you will find it informative reading. For example, the allegations that MARC employees declined to assist lambs caught in a hailstorm neglected to mention that the storm also included two tornadoes – a situation that precluded us from putting human lives at risk. The questions and answers are online at <http://www.ars.usda.gov/is/foia/marc.html>

As a result of the article, we have been cooperating with two separate inquiries that have, unfortunately, been conflated – one regarding policies, procedures and conditions that exist today, and the second one regarding the newspaper's allegations, which in most cases are many years – even decades – old.



Secretary Vilsack responded to those news reports by establishing a panel of veterinarians and animal welfare experts and directing it to look into research animal care, not only at the Nebraska center but across ARS – the well-being of animals and ARS’ policies, procedures, and standards for livestock in ARS research. Meanwhile, the Office of Inspector General has begun a separate, independent inquiry into the allegations by the newspaper.

On March 9, the panel established by the Secretary issued its draft report on current ARS policies and the conditions at the Clay Center. A final draft of this report is expected by April 23. Meanwhile, inquiries by the Inspector General’s office typically take several months to complete. We welcome the inquiry and have been cooperating in full.

According to the draft report to the Secretary, the review panel observed healthy and well-cared for animals – without exception. The panel found “No instances of animal abuse, misuse, or mistreatment...” They also commented that in their experience animals that are calm and unafraid are not animals that have been abused. The two behaviors do not go together.

The expert panel did identify some areas where improvements can be made, focusing primarily on processes and documentation associated with the role of the existing Institutional Animal Care and Use Committee (IACUC), and on additional training. I directed that those recommendations be implemented immediately. ARS is moving quickly to implement the panel's recommendations, and in addition, an Animal Welfare Ombudsman has been named by ARS.

The Center was portrayed in the article only doing research to boost production efficiency in private industry. However, it has a long history of accomplishments benefitting not only American farmers and industry, but also consumers, the scientific community, and the environment. USMARC research has also provided insights to *benefit* the welfare of the animals that feed our population, including research on animal health and disease prevention, environmental management, and heat stress—key factors in agricultural production in the face of climate variability.

A few examples of work by researchers there include:

- Developing a hide-washing tool that has reduced the national incidence of *E. coli* in ground beef samples by over 40 percent. The treatment is now used for about half of U.S. beef cattle.
- Developing more accurate genetic tests for diagnosing scrapie disease in sheep. This achievement could promote the eventual eradication of this contagious, incurable and fatal disease, by allowing producers to breed more scrapie-resistant flocks.
- Developing non-invasive tools for identifying and reducing sheep susceptibility to ovine progressive pneumonia—a viral disease that affects sheep and frequently kills them.
- Developing another non-invasive measuring technique, called the "immunocrit," that recognizes piglets within a litter that have not eaten or had the chance to nurse. Farmers who use this technique can then identify and save at-risk piglets.
- Showing that *E.coli* can spread more than a tenth of a mile downwind of a cattle feedlot onto nearby produce, providing information important to increase food and public safety in the process.
- Developing a new method to control runoff of manure - a significant environmental and economic problem for ranchers – which requires

minimal management, removes standing water, significantly reduces waste storage time, and eliminates the need for runoff pumping.

There are times when unwanted attention can be an opportunity. I have been looking at a recent Academy report about Assessing the Health, Environmental, and Social Effects of the Food System that recommends a systems approach for consideration by the agricultural research community.

The broad examination we are undertaking of our animal research and its direction as we try to feed the new middle class across the world, can lead us to enhanced food safety, environmental stewardship and productivity. We are committed, fund, and perform research that conforms to humane and ethical standards of conduct. I believe we have been doing that, and our further investigations will alert us to any shortcomings.

As we've been responding to the misrepresentation of USDA's practices and procedures that protect animal wellbeing and health, it was fortuitous that USDA and stakeholders in the animal sector had requested The National Academy of

Sciences to undertake a study on the Critical Role of Animal Science Research in Food Security and Sustainability.

I've already referenced the first sentence in that report, but it bears repeating:

“Reinvigorating animal agricultural research is essential to sustainably address the global challenge of food security.” Their overarching recommendations were to develop:

- Holistic approaches to animal productivity and sustainability including the use of “inter- and trans-disciplinary research collaborations involving both the public and private sectors.”
- Integration of economic, environmental and social sustainability research.
- Engagement of broader range of disciplines within animal science research.  
To include socioeconomic/cultural research to guide and inform animal scientists and decision makers.
- Ways to close the existing broad communication gap between public, research and the food industries.
- Research directed to the development of global guidelines, standards and regulations. The report recommends that the U.S. expand its involvement in research that assists in the development of internationally harmonized

standards, guidelines and regulations related both to trade in animal products and protection of the consumers of those products.

- Revitalization of animal agriculture research infrastructure in the United States through the planning and new partnerships.

This report speaks directly to the “perfect storm” confluence of challenges I mentioned earlier. And to our concerns about animal welfare and the need for understanding and respecting societal concerns about food animal research whether it’s performed in ARS labs or university or private sector facilities.

The Report also calls on “agriculture researchers and practitioners ... [to] learn from the successes and mistakes of the “Green Revolution” to design and conduct even more successful research that optimizes animal protein production while minimizing environmental, social and economic impacts.”

We expect that middle class people in the developed world will continue to want to eat meat from a variety of species. But in the developing world, there’s a greater demand for poultry and eggs, goats and dairy cattle as protein sources

that are sustainable. Food security in this growing population is critical and must also be sustainable especially as climate changes and impacts animal survivability and health.

Animal science research should address our global need to increase production efficiency while providing a lean, high-quality, health-promoting food product for consumers in socially-responsible ways. We will achieve this only with the diligent work of scientists at locations like the Clay Center and at land-grant universities throughout the country. Although it is never easy to find your mission and methods being questioned, the Department is unwavering in its resolve to use practices for animal health and welfare throughout our operations that meet or exceed recognized quality practices and at the same time to create a safe, nutritious, sustainable, competitive U.S. food and fiber system for consumers here at home and around the world.

In closing, my challenge to you attending this summit to define animal nutrition research priorities for a healthy society is to consider the economic, environmental, and social sustainability of farm animal production systems in

your agenda, and how you will engage the public in the process. I wish you a successful summit meeting and I look forward to receiving the research priorities you are developing. Thank you.