



Federal funding is needed to secure programs that directly impact veterinary medicine, animal health and welfare, food safety, animal disease surveillance and public health.

AGRESEARCH:

USDA's Research Enterprise

- **\$420,000,000, Agriculture & Food Research Institute**
- **\$1,300,000,000, Agriculture Research Service**

USDA	FY	Final	P.L.
AFRI	2017	\$375,000,000	115-31
AFRI	2016	\$350,000,000	114-113
AFRI	2015	\$325,000,000	113-235
AFRI	2014	\$316,400,000	113-79
AFRI	2013	\$275,500,000	113-2
AFRI	2012	\$265,900,000	112-55
AFRI	2011	\$265,000,000	112-10
AFRI	2010	\$262,400,000	111-80

USDA	FY	Final	P.L.
ARS	2017	\$1,170,235,000	115-31
ARS	2016	\$1,143,825,000	114-113
ARS	2015	\$1,132,000,000	113-235
ARS	2014	\$1,124,003,000	113-79
ARS	2013	\$1,101,346,000	113-2
ARS	2012	\$1,094,647,000	112-55
ARS	2011	\$1,135,501,000	112-10
ARS	2010	\$1,179,639,000	111-80

USDA's research enterprise plays an essential role in funding food and agricultural research, and attracting the best scientists to address national priorities in animal sciences, animal diseases, food safety, antimicrobial resistance and public health. In fact, with advancements in detection, treatment, eradication and recovery from animal diseases, the U.S. will save billions of dollars for the U.S. agricultural economy.

AVMA urges the USDA research enterprise devote more resources to vaccine development and diagnostics, antibiotics, anthelmintics (de-wormers), antifungals and parasiticides; antimicrobial use strategies, control and therapy for diseases and infections; transboundary disease and foreign animal disease; water quality; animal welfare, including animal handling and management; biosecurity for agro-tourism and prevention, surveillance and response to agro-terrorism; food security; improving genetics; management and transport of food producing animals; microbiome; and organics.

Because many infectious animal diseases have the potential to cross into the human population and impact human health, USDA is urged to collaborate with biomedical researchers to support assessments of human impacts.

Disease outbreaks lead to millions of sick animals, many of which must be culled and cost the U.S. billions in production losses and response costs. Amplifying USDA's attention to the following animal diseases will improve animal health and welfare, help protect the U.S. food animal-producing industries from economic harm, and protect U.S. consumers from contamination of the domestic food supply.

Highly Pathogenic Avian Influenza (HPAI): During a seven month span beginning in Dec. 2014 in the Pacific Northwest, a HPAI outbreak spread across 21 states, affected 211 commercial and 21 backyard poultry flocks and resulted in the depopulation of 7.5 million turkeys and 42.1 million egg-layer and broiler chickens. The outbreak cost over \$1 billion, not including downtime losses faced by producers.

There are currently 4 commercially available vaccines for AI licensed in the US but there are several problems associated with their use. They are primarily in injectable form which makes their utilization in the face of a major disease outbreak labor and cost intensive. Additionally, their use must be approved by the USDA and state veterinarian because vaccination can have negative trade implications. **Vaccinated animals cannot be differentiated from naturally infected animals.** Importing countries view the presence of antibody as evidence of prior or active infection.

Funding to further **develop both the DIVA (Differentiating Infected from Vaccinated Animals) vaccination strategy for AI as well as continued research into the development of an effective vaccine against AI** that can be administered via aerosol or water would greatly benefit the U.S. and its poultry industry.

Foot and Mouth Disease (FMD): It is estimated that an uncontrolled outbreak of FMD would have a \$200 billion impact over 10 years. FMD is a highly contagious viral disease causing fever, blisters on the feet and mouth, loss

of appetite, drooling, and lameness impacts in cows, pigs, sheep, goats, deer and all other domestic and wild animals with cloven hooves. FMD is considered one of the most economically devastating diseases in the world. Most affected herds are culled. While the U.S. has been FMD-free since 1929 there is no guarantee the disease won't return – an outbreak would devastate the livestock industry. **USDA is urged to redouble investment in the development of a universal vaccine for FMD as well as biotherapeutic countermeasures that will provide immunity.**

There are seven different types of FMD viruses and more than 60 subtypes, so vaccines must be highly specific, matched to the type and subtype present in an outbreak, to protect animals against developing clinical signs of disease. **Resources need to be devoted to investigating ways to differentiate between vaccinated and infected animals.** Current diagnostic testing methods are only validated for single sample/single animal testing. To have any hope of responding to an outbreak, pooled sample/multi-animal diagnostic tests must be developed and validated.

African Swine Fever (ASF) is a highly contagious hemorrhagic disease of pigs that produces a wide range of clinical signs and lesions that closely resemble those of classical swine fever. **There is no treatment for ASF, and all attempts to develop a vaccine have so far been unsuccessful.** Prevention depends on ensuring that neither infected live pigs nor pig meat products are introduced into areas free of ASF. All successful eradication programs have involved the rapid diagnosis, slaughter, and disposal of all animals on infected premises. Introduction of this disease into the U.S. would have a devastating effect on the American swine industry. **USDA has developed surveillance programs for the early detection of FMD and ASF. These programs are awaiting validation in order to be approved for deployment to the veterinary diagnostic laboratories.** In addition, the current sample types (oral swabs for FMD and whole blood for ASF) are not routinely included in most swine diagnostic samples submitted to the veterinary diagnostic laboratories. **Additional sample types (such as oral fluids or tonsil) need to be developed and validated. The funding necessary to support surveillance enhancement, validation and implementation need to be prioritized.**

Cattle Fever Tick (CFT) and Bovine Babesiosis: *Babesia* is emerging health threats to both animals and humans in the U.S. Accelerated research at USDA is needed to prevent catastrophic economic losses due to CFT and bovine

babesiosis. Additionally there are impacts from human babesiosis due to cattle-associated *Babesia divergens* and *Babesia divergens*-like organisms which has led to an increase in the number of cases of human babesiosis over the past 25 years. **Research on novel technologies to manage and eliminate foreign livestock pests and tick-borne diseases** from south Texas is needed to protect the U.S. cattle industry from suffering losses similar to those faced by Brazil (\$3 billion) and Mexico (\$573 million). Movement of CFT infested wildlife (i.e., white-tailed deer and nilgai across the Mexican border) exacerbates our need to protect the U.S. cattle industry and human health. At present, Texas is issuing temporary preventive quarantines on multiple premises in the CFT-free zone of the U.S.; however, that is not a permanent solution. We need methods for integrated eradication to control and eliminate CFT outbreaks involving wildlife, expedited area-wide tests of innovative technologies to control CFT infestation, and to adapt protocols for research in wildlife. **Technology innovation involves anti-tick vaccines; longer-acting acaricide formulations; safer acaricides; alternative acaricide delivery systems; tick growth regulators; acaropathogenic fungi and nematodes; remote surveillance and delivery systems;** and algorithms to assess return on investment for the implementation of adaptive area-wide integrated CFT eradication protocols. Resistance to acaricides commonly used to prevent/treat CFT infestation renders those treatments ineffective, and **drugs to prevent bovine babesiosis are not approved for use in the U.S. Funding is needed to research new methods to prevent further spread of CFT and to mitigate the risk for the re-emergence of bovine babesiosis.**

Animal Welfare Research

The welfare of animals used in or impacted by agricultural practices is an under-emphasized subject area. Much of the research that does exist is fragmented or industry-funded which reduces its influence in the public sphere. **There are multiple areas which require concerted and transparent research efforts including: validation of welfare assessment methods and certification schemes; stress reduction during transportation of animals; the role of genetics on welfare; outcomes for neonatal animals such as male chicks and dairy calves; welfare-friendly and practical animal housing; reduction of the use of painful procedures; and development rapid depopulation methods that are humane and acceptable to society.** In order to protect the sustainability and reputation of the agricultural sector the AVMA encourages congress to support and fund USDA research opportunities in the aforementioned areas.