



BACKGROUND

The AFRI Foundational Program is offered to support research grants in the six AFRI priority areas to continue building a foundation of knowledge critical for solving current and future societal challenges. The six priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Renewable Energy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. In FY 2010, approximately \$64 million is available to support the Foundational Program within AFRI.

PROGRAM AREA PRIORITIES

Plant Health and Production and Plant Products

Plant Sciences – Applications are limited to: 1) Epigenetic regulation of crop plants in water use efficiency or adaptation to drought; root or seed development; and nutrient uptake, assimilation, and/or utilization or 2) regulatory networks of crop plants in: 1) Light or hormone signal transduction and 2) Photosynthesis or carbon sequestration. Standard Research Projects up to \$500K total up to 5 years. Contact Liang-Shiou Lin

Pest and Beneficial Insects in Plant Systems – Applications must: 1) Understand the environmental and biological processes that affect the abundance and spread of agriculturally important insects; 2) Increase fundamental knowledge of plant-insect interactions affecting abundance and behavior of insects; or 3) Elucidate genetic mechanisms used by insects to infest and develop in plants and correspondingly how plants respond to insects. Standard Research Projects up to \$500K total up to 5 years. Contact Mary Purcell-Miramontes

Animal Health and Production and Plant Products

Animal Health and Production: Animal Bioinformatics and Development of Tools for Livestock, Poultry, and Aquaculture – Applications are limited to: 1) Development of bioinformatic tools that will assist in functional genomics, annotation and comparative genomics, in silico analysis, and use of genomic data in genetic improvement programs of agriculturally important animals or 2) SNP chips for various species, microarrays, and other advanced tools that take advantage of new sequence information. Standard Research Projects up to \$750K total up to 5 years. Contact Mark Miranda

Animal Health and Production: Animal Reproduction – Applications must address: 1) Function of the hypothalamic-pituitary-gonadal axis and/or 2) Embryonic and fetal development, including interaction between the conceptus and its uterine environment. Standard Research Projects up to \$500K total up to 5 years. Contact Mark Miranda

Animal Health and Production: Animal Health – Applications must address improved prevention, control and/or mitigation of the following diseases: 1) Visceral Toxicosis of Channel Catfish; 2) Bovine Respiratory Disease Complex; 3) Infectious Laryngotracheitis; 4) *Staphylococcus aureus* or *Streptococcus* species mastitis; 5) *E. coli* peritonitis; or 6) Porcine Reproductive and Respiratory Syndrome. Standard Research Projects up to \$500K total up to 5 years. Contact Peter Johnson

Food Safety, Nutrition, and Health

Food-borne Pathogen-Plant Interactions – Studies must address physical and molecular mechanisms that allow food-borne pathogens to attach onto and internalize into fresh food crops, including nuts. Standard Research Projects up to \$500K total up to 5 years. Contact Jeanette Thurston

Practical Approaches to Food Safety – Studies must develop and validate on-farm and/or post-harvest processing sampling plans for detection and enumeration of food-borne pathogens on produce and in environmental samples. Standard Research Projects up to \$500K total up to 5 years. Contact Jeanette Thurston

Reducing Food Allergies by Improving Food Quality – Applications must address: 1) Characterization of unique biochemical and biophysical properties of food allergens enabling their binding to IgE and how food processing might affect these unique characteristics; 2) Development of methods for qualitative and quantitative detection of allergens, including ex vivo and in vivo models; or 3) Physical, biological, and chemical processing methods that result in reduction or elimination of allergens in foods, without affecting their sensory and nutritional/health qualities. Standard Research Projects up to \$500K total up to 5 years. Contact Dionne Toombs

Renewable Energy, Natural Resources, and Environment

Microbial Communities in Soil – Applications must address: 1) Discovery and classification of agriculturally relevant soil microbial communities and their members using metagenomic approaches combined with sequencing of reference microbial strains which are components of the community or communities under study; 2) Molecular mechanisms of communication among bacterial and plant members of rhizosphere communities; and/or 3) Development and support a national workshop in the form of a Conference Grant to seek stakeholder input on the location(s) and characteristics of a "model" soil microbial community or communities. Standard Research Projects up to \$500K total up to 5 years. Contact Ann Lichens-Park

Agricultural Water Science – Applications must address: 1) Threshold values of drought indicators are drought triggers and tie the levels of drought severity with appropriate responses to maintain agricultural production or 2) Potential and relevance for bioaccumulation of recycled water constituents applied at typical irrigation rates used exclusively or through blending with surface and groundwater sources. Standard Research Projects up to \$500K total up to 5 years. Contact James Dobrowolski

Agriculture Systems and Technology

Engineering Approaches for Improved or Alternative Management Systems to Safeguard Animal Welfare – Applications must address: Objective, quantitative and qualitative measurement methods/standards for assessing animal well-being by the development of valid, reliable, and reproducible systemic approaches that include the animal’s physical condition, biological phenomena, and cognitive well-being and 1) Comparisons between different confinement systems or development of alternative housing systems that address engineering and performance standards for either poultry or swine housing or 2) Mitigation of environmental stresses that may adversely affect animal welfare such as heat, cold, and air quality in environments of poultry or swine. Standard Research Projects up to \$700K total up to 5 years. Contact Margo Holland

Nanoscale Science and Nanotechnology to Ensure Safe Food – Applications must address development of knowledge and control of formation of novel nanoparticles, nanostructures and systems that can effectively enhance food safety and biosecurity. Standard Research Projects up to \$500K total up to 5 years. Contact Hongda Chen

Agriculture Economics and Rural Communities

Prosperity of Small and Medium-Sized Farms and Rural Communities – Applications must: 1) Develop new multidisciplinary models and tools to facilitate the adoption of new agricultural production and conservation practices, and in turn, enhance the prosperity of small and medium-sized farms; 2) Evaluate the impacts of changes in input costs and markets; 3) Promote the sustainability of small and medium-sized farms and rural communities by enhancing knowledge of appropriate entrepreneurship and small business development strategies; 4) Evaluate the institutional, social, cultural, economic and psychological factors that affect consumer and producer behavior in rural communities, and in turn, enhance the efficiency and equity of public and private sector investment in agriculture and rural communities; and/or 5) Identify optimal regional land use and architectural decisions that protect the rural environment and promote economic development while reducing poverty and enhancing rural quality of life. Standard Research Projects up to \$500K total up to 5 years. Contact Suresh Sureshwaran

Economics of Markets and Development – Applications must: 1) Enhance understanding of the changes in agricultural input- and output-market structure and conduct, and in turn, its effectiveness in the development of competitive markets at home and abroad; 2) Develop new models and theories to enhance understanding of changes in domestic and foreign consumer tastes and preferences to help promote the development of new agricultural genetic materials and agribusiness products and technology; and/or 3) Enhance understanding of causes and impacts of market failure and develop strategies to incorporate the externalities in agricultural resource and product markets. Standard Research Projects up to \$500K total up to 5 years. Contact Suresh Sureshwaran

PROGRAM AREA CONTACTS

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PROGRAM AREA DEADLINE DATES

PROGRAM AREA	LETTER OF INTENT DEADLINE	APPLICATION DEADLINE
Plant Sciences	April 20, 2010	July 7, 2010
Pest and Beneficial Insects in Plant Systems	April 22, 2010	June 10, 2010
Animal Health and Production: Animal Bioinformatics and Development of Tools for Livestock, Poultry, and Aquaculture	April 21, 2010	July 14, 2010
Animal Health and Production: Animal Reproduction	n/a	May 4, 2010
Animal Health and Production: Animal Health	n/a	May 5, 2010
Food-borne Pathogen-Plant Interactions	April 14, 2010	May 26, 2010
Practical Approaches to Food Safety	May 12, 2010	August 4, 2010
Reducing Food Allergies by Improving Food Quality	April 14, 2010	June 14, 2010
Microbial Communities in Soil	May 3, 2010	August 23, 2010
Agricultural Water Science	n/a	May 19, 2010
Engineering Approaches for Improved or Alternative Management Systems to Safeguard Animal Welfare	April 14, 2010	July 8, 2010
Nanoscale Science and Nanotechnology to Ensure Safe Food	n/a	May 14, 2010
Prosperity of Small and Medium-Sized Farms and Rural Communities	n/a	July 14, 2010
Economics of Markets and Development	n/a	July 7, 2010