

# NATIONAL PORK BOARD

## General Call - 2014

***DEADLINE: Tuesday, November 19th – 5:00 pm CST***

The National Pork Board is soliciting research proposals dealing with:

ANIMAL SCIENCE – Animal Science  
ANIMAL SCIENCE - Swine Nutrition  
ANIMAL WELFARE - Animal Welfare  
ENVIRONMENT – Air  
ENVIRONMENT – Manure Storage/Application  
HUMAN NUTRITION - Human Nutrition

PORK QUALITY – Pork Quality  
PORK SAFETY – Post-Harvest  
PUBLIC HEALTH – Producer/Public Health,  
Workplace Safety and Zoonotic Disease  
SWINE HEALTH – Foreign Animal Disease  
SWINE HEALTH – General Swine Disease

Please read carefully the individual solicitation descriptions for project proposals. If you have questions related directly to the description of a specific solicitation, contact the staff member listed in charge of the program area. For questions on the submission process, contact Bev Everitt at [beveritt@pork.org](mailto:beveritt@pork.org) or 515/223-2750.

### STAFF MEMBERS:

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To be considered for committee review, **all proposals must be submitted via the website by 5:00 p.m. CST on Tuesday, November 19<sup>th</sup>**. See [www.pork.org](http://www.pork.org) for links. Proposals will be reviewed by both technical advisors and pork producers prior to the committee selection meetings. Final funding is subject to approval by the National Pork Board and USDA.

### NOTES:

Proposal selection will occur in February 2014.  
Notification of grant awards will be done in March 2014.  
Project funding will begin May 1, 2014.  
Requests for second-year funding must be resubmitted.

The Animal Science Committee of the National Pork Board is soliciting proposals in the areas of **Mitigation of High Feed Costs and Mitigation of the Impact of Seasonality on Productivity**. Proposals must be submitted in the attached format to be considered. Projects may cover multiple-years for completion of an entire project. However, proposals for multi-year projects are expected to detail project deliverables and budgets on a year-to-year basis. If proposed projects are for completion of multi-year efforts already in-progress, the proposal must include a narrative of progress and accomplishments to date of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the submitted proposal. Proposals will be reviewed by panels of experts for scientific soundness and by pork producers for industry application. Proposals may be returned to the investigator with suggested/requested revisions prior to final funding decisions. Funding for accepted projects will follow final approval by the National Pork Board.

*Proposals are solicited in these areas only. Proposals submitted that do not adhere to this area will not be considered further.*

## **ANIMAL SCIENCE – Animal Science**

### **Mitigation of the Impact of Seasonality on Productivity**

Below is a **ranked** list of research priorities to be addressed by the Mitigation of High Feed Cost research. Submitted proposals must bring fundamental knowledge to application to reduce feed cost and feed cost variation. Achievement of these priorities will require a variety of disciplines including but not limited to nutrition, nutritional physiology and biochemistry, immunology, mathematical modeling and ingredient chemistry. Proposals utilizing a multidisciplinary approach are highly encouraged. Proposals should reference key concepts such as feed cost, caloric efficiency, ingredient value, dynamic or predictive estimates of nutrient value and disease-related diversion of nutrients. Applied growth assays should be conducted in commercial-like conditions and with sufficient replication to make statistically appropriate conclusions. Nursery trials will be given higher consideration when subsequent finishing performance is monitored. Submitted proposals must show evidence of sufficient statistical power in relation to primary project objectives, clearly define the role of the study in meeting the objective to deliver cost effective technology, and address one or more of the following research priorities to be considered for funding:

- 1) Nutrient extraction from low energy feedstuffs including but not limited to the effect of dietary factors on digestibility, gut function and enzyme supplementation
- 2) Novel feed processing methods or emerging technologies having direct field application in reducing the cost of feed
- 3) Mechanisms or development of technologies for enhancing quantification of feeding values of dietary ingredients
- 4) Interaction of nutrition and health including, but not limited to, the effect of nutrition on animal performance, caloric efficiency, nutrient requirements and/or disease persistence when animals are faced with a health challenge

## **ANIMAL SCIENCE - Swine Nutrition**

### **Mitigation of High Feed Cost:**

Seasonal variation affects all producers and all phases of production but, producers have few tools to address seasonal loss in productivity and profitability. Seasonal variation in temperature leads to substantial variation in productivity (average daily gain, feed efficiency and days on feed), pork quality (fat quality as evidenced by iodine value, marbling and belly thickness) and reproductive efficiency (farrowing rate, litter size and sperm production). The following areas of production have been given priority by the Animal Science Committee of the National Pork Board as being the most responsive to seasonality:

- 1) Reduced weight gain and impaired feed efficiency leading to higher input costs, increased days on feed and lighter market weights
- 2) Reduced pork quality as evidenced by reduced marbling, belly firmness and elevated iodine values and altered fatty acid profiles of carcass fat
- 3) Reduced breeding herd efficiency through impaired reproduction as evidenced by prolonged return to estrus, reduced conception rate, higher fall out rate and reduced sperm number and quality.

Submitted proposals must bring fundamental knowledge to application to mitigate the impact of seasonality on productivity in one or more of these areas. Successful investigation in this area will likely require a variety of disciplines including but not limited to environmental monitoring, nutritional intervention, nutritional physiology and biochemistry, mathematical modeling, fatty acid analysis of feeds and carcass fat; proposals should reference these key concepts. Proposals utilizing a multidisciplinary approach are highly encouraged. Preference will be given for research trials conducted in commercial-like conditions and with sufficient replication to make statistically appropriate conclusions. However, the Committee recognizes that smaller-scale research using environmental chambers may be a necessary approach to answering some of the more basic questions. Submitted proposals must show evidence of sufficient statistical power in relation to primary project objectives and clearly define the role of the study in meeting the objective to deliver cost effective technology.

#### **Further Information**

- Preference will be given to projects that involve academic and commercial collaboration, except where discovery is needed to establish principles necessary for additional research
- Projects spanning more than one year are not discouraged so that a project is provided sufficient time to deliver desirable outcomes. However, funding of a multi-year project must be justified, with second and third year funding being dependent on sufficient progress of the prior year
- Preference will be given to projects addressing priorities of highest value and/or spanning more than one priority
- Proposals that include provisions for analysis of the economic impact of the research to the swine industry are encouraged. This may be accomplished by inclusion of an agriculture economist on the research team.

For information regarding this solicitation, please contact Chris Hostetler by Email ([chostetler@pork.org](mailto:chostetler@pork.org)) or by phone at (515) 223-2006.

## ANIMAL WELFARE

*The Pork Checkoff Animal Welfare Committee is requesting proposals on issues impacting the welfare of swine. Specific research areas of interest are listed below. All proposals submitted **must** address at least one of the specific research subtopics of interest described below.*

*All submitted projects should be multidisciplinary in their approach and should include neuroscience, performance, physiology, and behavior when applicable. Experimental designs must have all the appropriate controls to be considered for funding. Proposed methodologies need to be described in detail and behavioral methods and physiological assays used in the study need to be validated. Proposals need to also include power calculations to validate the proposed sample size. Projects that have cooperative arrangements with industry are strongly encouraged and will be prioritized. All approved projects using animals in research for any purpose must be reviewed by an Animal Care and Use Committee (ACUC) or equivalent. An ACUC approval is not only required for future publication of results in a peer reviewed journal, it also ensures a high standard of care of animals used in research in accordance with federal regulations and policies.*

*The Animal Welfare Committee has \$320,000 to fund swine welfare related research. There is no exact funding limit for submitted proposals but the budget request should be appropriate and justified for the work that is being proposed. Researchers are encouraged to find matching funds or in-kind contributions to the project.*

*Newly submitted multi-year proposals should provide a clear overall vision and objectives for the entire project with a detailed plan of work and budget outline for each of the proposed years. If proposed projects are seeking second-year funding of a previously funded project, the proposal must include a discussion of progress and accomplishments realized from the research efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted.*

*Proposals must be submitted in the attached format to be considered. All eligible proposals will be reviewed by a panel of peers for scientific soundness and validity. Final funding decisions will be made by the National Pork Board. Further enquiries regarding this solicitation can be directed to Sherrie Niekamp by email [sniekamp@pork.org](mailto:sniekamp@pork.org) or by phone: 515/223-3533.*

**1. Euthanasia** - It is likely on every farm that animals will become ill or injured in such a way that euthanasia will be necessary. Specific research topics of interest with regard to euthanasia are described below (please note that these are **not** in priority order). **Research initiatives for each of the euthanasia methods listed below should address confirmation of loss of consciousness, confirmation of death, interval to/until loss of consciousness, interval to/until death, reliability and repeatability, and human safety and acceptability.**

- Gunshot - Characterize the ballistics of firearms needed for safe and humane euthanasia of swine of different ages/sizes. This includes appropriate muzzle energy, caliber/gauge size, ammunition type, and angle/direction/point of entry of the bullet. Considerations should be made for anatomical differences among breeds.
- Electrocutation
  - Determine and validate the optimal amperage/voltage requirements and duration of stun to achieve euthanasia in various ages/sizes of pigs.
  - Determine the minimum size/age of pigs and needed amperage/voltage that electrocution methods require to effectively achieve death quickly and consistently.
  - Development of a restraint method that provides for the humane restraint of the pig to be euthanized, allows for the ease of administration of the method, and provides for the safety of the worker.
- Novel methods - Identify and validate new and novel methods of or equipment for euthanasia of swine. Key elements for determining if a method is humane include minimal pain and distress to the pig during administration, rapid loss of consciousness, and that death is achieved quickly and consistently. Proposals

focusing on agents or methods of euthanasia that are considered unacceptable as outlined in Appendix 4 of the AVMA Guidelines on Euthanasia (2007; [http://www.avma.org/issues/animal\\_welfare/euthanasia.pdf](http://www.avma.org/issues/animal_welfare/euthanasia.pdf) ) will not be considered for funding.

**2. Sow Gestation Housing** – Housing of gestating sows has been and continues to be an important question for the swine industry. Proposals for individual and group housing systems will be accepted in this section with less emphasis on comparing group housing to stall housing. Specific research topics of interest with regard to housing and management of gestating sows are described below (please note that these are **not** in priority order). Please note that proposals should evaluate behavior specifically as it relates to aggression as well as physiology and productivity.

- Compare of different space allowances within group housing systems to determine the minimum square footage needed for the design to be successful.
- Determine the effect of group size on behavior, physiology, and production measures with emphasis on medium and large group sizes (medium >20, large >50).
- Determine the interaction between space allowance and group size for different feeding systems? How can this interaction be optimized?
- Determine the impact that weaning directly into groups will have on aggression, physiology and productivity for static group settings.

**3. Handling and Transportation**– The handling and transport of pigs is a critical element in the swine industry. It is important to understand the needs of the pig during transport in order to handle and transport them safely while minimizing stress.

- a. **Weaned or Feeder Pigs:** Proposals addressing weaned or feeder pigs should address the impacts of handling and transport during and after transport as measured by effects on ADG, ADFI, FE, health status, mortality, and/or incidence of culls. Proposals should address at least one of the following objectives for weaned pigs (3-5 wks of age) or feeder pigs (10-12 wks of age) (please note that these are **not** in priority order):
- Define the interaction of transport time with pig well-being. Specifically, identify the maximum amount of time a class of pig can be transported before the well-being of the pig becomes significantly compromised. Possible factors to consider in the experimental design include: season, trailer type, and on board provisions (i.e. food and water).
  - Determine the proper use of bedding and weather boards/plugs in controlling the internal environment of the trailer so as to provide for the thermal comfort of the pig during cold, moderate, and warm temperatures. Targeted temperatures should reflect those commonly experienced during the winter in the Northern region and/or summer in the Southern region of the U.S.A.
  - Determine and evaluate proper use of cooling mechanisms in controlling the internal environment of the trailer during loading and transport so as to provide for the thermal comfort of the pigs during warm and hot temperatures. Targeted temperatures should reflect those commonly experienced during the summer and fall in the Midwest and Southern regions of the U.S.A.
  - Develop and evaluate technologies and/or techniques that contribute to a low stress handling system that promotes self-movement by the pigs. This includes group sizes, ramp design and angles, handling tools, etc.
- b. **Market Pigs:** Proposals should address at least one of the following objectives for market pigs (please note that these are **not** in priority order):
- Determine the proper use of bedding and weather boards/plugs in controlling the internal environment of the trailer so as to provide for the thermal comfort of the pig during long (defined as more than 8 hrs) transport distances. Targeted temperatures should reflect those commonly experienced along common transport routes through various geographic regions and elevations across the U.S.A.

**4. Pain Management** – Proposals in this category should address at least one of the following objectives (please note that these are **not** in priority order):

- Identify and validate physiological and behavioral indicators of pain in piglets 0 to 10 days of age.
- Quantify the pharmacokinetic properties of different types of analgesics and local anesthetics for piglets 0 to 10 days of age.

- Evaluate the effectiveness of different classes of analgesics (e.g. NSAIDs, local anesthetics, etc.) to reduce the pain associated with castration and/or tail docking.
- Develop and evaluate potential alternatives or modifications of castration or tail docking procedures that provide for the well-being of the pig.

**5. Other Animal Welfare Topics** – This is an open category for research topics other than those priorities previously listed. Proposals submitted in this category may address any topic area but must be relevant to U.S. pig production and must focus on the evaluation of swine well-being.

It is important to understand the factors within pork production that could have a potential impact on the well-being of the pig. Examples of these factors include, but are not limited to: aspects of the pig's physical environment (flooring, bedding, air quality, pen shape, resource location, etc.), human interaction, cohort interaction, and current production practices.

Proposals submitted in this category must provide an explanation of why the topic is relevant to the U.S. swine industry and how the study will impact/promote animal welfare.

The Environment Committee solicits proposals in the following three areas. Proposals must be submitted in the specified format to be considered. Projects may cover multiple-year efforts for completion of an entire project. For multi-year projects expected project deliverables and budgets will be broken down by year. If proposed projects are for completion of multi-year efforts already in-progress the proposal must include a discussion of progress and accomplishments realized from efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted. Proposals will be reviewed by panels for scientific soundness and for industry priority. Proposals may be returned to the investigator with suggested/requested revisions prior to making a final funding decision. Funding for accepted projects will follow final approval by the National Pork Board.

## **ENVIRONMENT - AIR**

### **1. Understand the fate and transport of emissions from swine operations and potential improved mitigation or control practices or technologies.**

Scope: Study impacts of animal diets, housing types, housing ventilation systems, ventilation controls (windbreaks / bio-filters), manure storage types, manure application methods and timing on the fate and transport of air emissions from swine production systems.. Preference will be given to proposals addressing multiple impacts.

Components of Research: Constituents for monitoring/measurement will include: Particulates (PM<sub>2.5</sub> & PM<sub>10</sub>), Volatile Organic Compounds (VOC), Methane, Ammonia, Nitrous Oxide and Hydrogen Sulfide. Preference will be given to proposals addressing multiple constituents. *Successful proposals will conduct research and monitoring at a commercial swine production facilities as opposed to laboratory or bench-scale efforts, and must include detailed economic analysis.*

Deliverables: Critical evaluation including costs and benefits of effect on retention, movement, and/or fate of the constituents.

## **ENVIRONMENT – Manure Storage/Application**

### **1. Evaluation of current and novel management practices to ensure manure constituent management, retention, and utilization.**

Scope: Study of fate and transport of manure constituents from land application of swine manure. Manure constituents for research include nutrients, pathogens, and pharmaceutical compounds. Preference will be given to proposals addressing multiple constituents and field-scale research as opposed to bench-scale or small test-plot studies.

Components of Research: Research factors such as soil type, vegetative cover or field residual, topography, method and timing of manure application affecting manure constituent movement through surface water runoff or movement through the soil .

Deliverables: Critical evaluation including costs and benefits of how existing and novel practices affect the retention, movement, and/or fate of manure constituents.

### **2. Evaluate potential nutrient loads attributable to the swine industry in the Chesapeake Bay Model considering mitigation/control technologies and best management practices currently employed in the swine industry.**

Scope: Refine estimate of the nitrogen, phosphorus and sediment loads entering the Chesapeake Bay related to only swine production considering current agricultural best management practices currently used in the watershed affecting swine manure nutrient movement (tiling, injection, precision manure application, buffers, tillage, etc.).

Components of Research: Estimate of the nitrogen, phosphorus and sediment loads entering the Chesapeake Bay related to only swine production considering current agricultural best management practices currently used in the watershed

Deliverables: A report evaluating the accuracy of nutrient inputs currently included in the Chesapeake Bay Model from swine production in consideration of agricultural best management practices currently used in the watershed.



## HUMAN NUTRITION

The Pork Safety, Quality and Human Nutrition Committee is requesting proposals **in the following areas only**. Specific research topics are listed below, not in priority order. All proposals submitted **must** address at least one of the specific research topics described below. **Novel approaches and concepts are encouraged.**

The Committee has \$160,000 for human nutrition related research for **2014 funding**. There is no exact funding limit for submitted proposals, but the budget request should be appropriate and justified for the work that is being proposed. Researchers are encouraged to find co-funding or matching funds or in-kind contributions for the project when possible.

Proposals must be submitted in the attached format to be considered. Projects may cover multiple-year efforts. For multi-year projects, project expected deliverables and budgets will be broken down by year. Proposals will be reviewed by panels for scientific soundness and for industry priority. Proposals may be returned to the investigator with suggested/requested revisions prior to making a final funding decision. Funding for accepted projects will follow final approval by the National Pork Board. Further inquiries regarding this solicitation can be directed to Adria Sheil-Brown by email [abrown@pork.org](mailto:abrown@pork.org) or by phone: 515/223-2632.

**Proposals are solicited in the following areas. Proposals submitted that do not relate to these areas will not be evaluated, scored or considered for funding (the topics below are NOT listed in any priority order):**

**For the below research areas where dietary meat and pork especially is considered, stress accurate descriptions of all the meat products involved (red, processed, by species, fresh, etc.).**

- a. What are the Metabolic/CV outcomes of higher protein, (20 to 35% of calories from protein) weight loss diets that include lean, fresh pork in African American and/or Hispanic Populations?
- b. What are the beneficial role of dietary nitrate/nitrates from processed pork excluding food safety and preservation aspects?  
Areas to investigate:
  - Mechanistic studies
  - Nutritional role certain processed pork products may play
- c. **Unique or novel** approaches to demonstrating the health benefits of fresh pork consumption. The National Pork Board is willing to think along new lines of research and explore new ideas involving our products in various diet plans and/or age and lifestyle situations.

The Pork Safety, Quality and Human Nutrition Committee is requesting proposals **in the following areas only**. Specific research topics are listed below, not in priority order. All proposals submitted **must** address at least one of the specific research topics of interest described below. **Novel approaches and concepts to the research topics are encouraged.**

There is no exact funding limit for submitted proposals, but the budget request should be appropriate and justified for the work that is being proposed. Researchers are encouraged to find matching funds or in-kind contributions to the project. Multi-disciplinary proposals are encouraged.

Proposals must be submitted in the designated format to be considered. Projects may cover multiple-year efforts. For multi-year projects, project expected deliverables and budgets should be broken down by year. Proposals will be reviewed by panels for scientific soundness and for industry priority. Proposals may be returned to the investigator with suggested/requested revisions prior to making a final funding decision. Funding for accepted projects will follow final approval by the National Pork Board. Further enquiries regarding this solicitation can be directed to Dr. Steve Larsen by email: [slarsen@pork.org](mailto:slarsen@pork.org) or by phone: 515/223-2754.

**Proposals are solicited in the following areas only. Proposals submitted that do not relate to this area will not be evaluated, scored or considered for funding. The topics below are NOT listed in priority order:**

## **PORK QUALITY**

### **What is the correlation of loin quality measurements to predict ham quality attributes?**

- 1) The majority of quality measurements have focused on the loin; however, there has been limited to no research correlating loin quality measurements to ham quality attributes. The Committee is requesting research proposals in this area. Below is a list of important Committee topics for researchers to consider when developing a proposal to address this topic:
  - a) Researchers are encouraged to investigate both fresh ham and processed ham quality attributes when correlating back to loin quality measurements
  - b) Important quality attributes are:
    - i) pH, marbling, color, water holding capacity, available protein, and tenderness (either SSF or WBS)
    - ii) The Committee is open to other quality measurements that are suggested and justified by the researcher
  - c) Researchers should include seasonality.

### **Understanding the variation of quality attributes from a barn of pigs**

- 1) The majority of quality measurements have focused on the average of a group of pigs from a barn or pen; however, there has been limited to no research trying to understand the variation of quality measurements from a barn of pigs. The Committee is requesting research proposals in this area. Below is a list of important Committee topics for researchers to consider when developing a proposal to address this topic:
  - a) The Committee wants to understand the variation of quality and not the average of quality from a barn of pigs.

- b) Important fat quality attributes are:
  - i) firmness, color, stability, fatty acid profile, fat separation and maturity
- c) Important fresh quality attributes are:
  - i) pH, marbling, color, water holding capacity, and tenderness (either SSF or WBS)
  - ii) The Committee is open to other quality measurements that are suggested and justified by the researcher
- d) Researchers should include seasonality.

## **PORK SAFETY – Post –Harvest**

### **Modeling Pork Curing for thermal inactivation of Trichinella and Toxoplasma**

- 1) There is a wide range of curing methods and potential new products; therefore, the development of a model for inactivation of Trichinella and Toxoplasma in pork is a priority for the Committee. The Committee is requesting research proposals in this area. Below is a list of important Committee topics for researchers to consider when developing a proposal to address this topic:
  - a) The model for pork curing processes should include:
    - i) salt/brine concentration, water activity, pH, temperature, nitrite and residual nitrite and time
    - ii) The Committee is open to other measurements that are suggested and justified by the researcher
  - b) Researchers are encouraged to include multiple cured pork products.
  - c) Researchers are encouraged to add naturally cured pork products as well.

## **PUBLIC HEALTH/Producer/Public Health, Workplace Safety and Zoonotic Disease.**

The Producer/Public Health and Workplace Safety (PPHWS) Committee is requesting proposals **in the area of producer/public health, workplace safety and zoonotic disease**. Specific research topics are listed below, not in priority order. All proposals submitted **must** address at least one of the specific research subtopics of interest described below. **Novel approaches and concepts are encouraged.**

The Producer and Public Health Committee has \$450,000 to fund producer/public health, workplace safety and zoonotic disease research.

- There is no exact funding limit for submitted proposals, but the budget request should be appropriate and justified for the work that is being proposed.
- Researchers are encouraged to find matching funds or in-kind contributions to the project. Trans-disciplinary proposals are highly encouraged.
- Proposals that include provisions for analysis of the economic impact of the research to the swine industry are encouraged. This may be accomplished by inclusion of an agriculture economist on the research team
- **To clearly differentiate from proposals addressing swine health issues**, proposals submitted in the area of producer/public health, workplace safety and zoonotic disease should explain for the Producer/Public Health and Workplace Safety Committee (which will make funding decisions), **how the study will impact/protect public health**. Applicants should use non-scientific language for this purpose.

To be considered, proposals must be submitted using the online system and following the guidelines described in the Instructions & Format document on [www.pork.org/research](http://www.pork.org/research). Proposals that do not follow the guidelines will not be reviewed. Projects may cover multiple-year efforts. For multi-year projects, project expected deliverables and budgets must be broken down by year. If proposed projects are for completion of a multi-year proposal already in-progress, the proposal must include a discussion of progress and accomplishments realized from efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted. Proposals will be reviewed by panels for scientific soundness and for industry priority. Proposals may be returned to the investigator with suggested/requested revisions prior to making a final funding decision. Funding for accepted projects will follow final approval by the National Pork Board. Further enquiries regarding this solicitation can be directed to Dr. Jennifer Koeman by email [jkoeman@pork.org](mailto:jkoeman@pork.org) or by phone: 515-223-2600.

**The research topics below are NOT listed in priority order:**

1. Worker Health and Safety
  - a. Studies, surveys or other methods to characterize workplace health and safety good production practices.
    - i. Studies should include a quantitative assessment of the outcome of employing the specific good production practice(s).
    - ii.
2. Antibiotic Use and Resistance/Antibiotic Alternatives

- a. Studies to demonstrate the science of prevention and control uses of antibiotics in pork production to maintain swine health and public health.
    - i. Studies should assess the swine health and subsequent public health outcomes of prevention and control uses of antibiotics versus not having these uses available.
  - b. Studies to evaluate alternatives to antibiotics.
    - i. Studies should address the potential public health outcomes of using antibiotic alternatives compared to conventional antibiotics.
    - ii. Both risks and benefits of such alternatives should be considered; especially, the risks for further co-selection of antibiotic- and antimicrobial-resistant bacteria as has been seen with heavy metals.
3. Influenza
- a. Studies to determine the interspecies transfer of influenza virus (e.g. from people to pigs and pigs to people) which can include viral ecology and risk factors associated with infection.
  - b. Studies to assess the impact of current interventions, such as vaccine use in people and pigs, hand washing and other physical barriers, on the interspecies transmission of influenza in pork production facilities, or studies to identify potential **new** interventions for mitigation of interspecies transfer of influenza virus in pork production facilities.
  - c. Studies, surveys or other methods to characterize influenza dynamics in exhibitors and their pigs through the show pig/exhibitor lifecycle (e.g. at purchase, on-farm, in exhibition settings) with an emphasis on identifying epidemiologic links to increased or decreased risk of infection for humans or pigs.
4. MRSA
- a. Studies to better understand the pathways of human occupational exposure to MRSA, susceptibility to colonization, factors prolonging carriage/colonization in both humans and pigs, and feasible interventions to reduce the risk of MRSA colonization of workers in pork production facilities.
  - b. Studies to advance knowledge of staphylococcal biology (not limited to MRSA) in the swine production environment.
5. Other Zoonotic Diseases
- a. Studies of the prevalence, diagnosis, epidemiology and/or human health risk for emerging and re-emerging zoonotic diseases associated with pigs.
  - b. Studies to evaluate intervention methods in pork production to protect humans from zoonotic agents that they may be exposed to in pork production facilities.

**Note:** Proposals for other zoonotic diseases should justify why the topic is relevant to the swine industry and how the study will impact/protect producer, public health, or worker safety.

## **SWINE HEALTH – Foreign Animal Disease**

*Foreign Animal Diseases (FAD's) can have significant negative impacts on producer and industry revenue, swine health, and animal welfare. The Checkoff's Swine Health Committee has made FAD research an industry priority. Listed below are the targeted areas of focus for the spring 2014 request for proposals for FAD's. The total amount expected to be available is \$600,000. There is no set limit on the amount per proposal. The Swine Health Committee encourages proposals that clearly communicate 1) relevance to the stated research priorities, 2) the thought process for the development of the technology or tool from concept to finished product and where the proposed work fits in that continuum 3) the opportunity to build on previous research or leverage ongoing research or research dollars 4) the opportunity to build and / or utilize multi-institutional collaborations to expedite the research.*

### **Research guidelines for FAD proposals are outlined below:**

#### ***Biosecurity***

1. Development of biosecurity tools or strategies that focus on prevention, intervention, containment and control of foreign animal diseases through the pork chain.
  - a. Transmission of Foreign Animal Diseases
    - i. Animals/Genetic Material
    - ii. Fomites, including survivability & transmissibility through:
      1. Transportation of live swine
      2. Fresh or processed meat products
      3. Diagnostic samples entering the U.S. from other countries
    - iii. Pig-free or Downtime Issues
    - iv. Feral swine
  - b. Cleaning and Disinfection
    - i. Swine and Packing Facilities / Equipment including the lairage area.
    - ii. Transport Vehicles, Personnel, and Farm Equipment
  - c. Risk management protocols for prevention of FAD spread to and from points of concentrations where swine are routinely commingled (e.g. sale barn, consolidators, lairage, fairs, etc)

#### **Risk Analysis**

1. Risk analysis of foreign animal disease introduction into the U.S. swine herd from animal and non-animal products that are used as inputs for pork production in the U.S.

#### ***ASF Diagnostics & Vaccines***

1. Evaluation of the potential for meat juice and oral fluids to be utilized for antibody, antigen and nucleic acid detection utilizing moderate to virulent ASF strains.
  - a. Evaluation of meat juice and oral fluids in a time course study that includes pooling of conventional samples (blood and swabs) as a comparison.
  - b. Comparison of sample selection methods (meat juice, oral fluids, blood and swabs) and time course for window of detection.
2. Proof of principle studies for ASF vaccine candidates that have been developed and characterized in previous studies.
3. Characterization of global ASF strains and development of diagnostic signatures.

## **CSF Diagnostics & Vaccines**

1. Development of new diagnostic technologies to include 1) a companion DIVA diagnostic assay for marker CSF vaccines 2) development of improved reagents for use in the U.S. for CSF virus isolation and immune-staining.
2. Evaluation of diagnostic performance characteristics (sensitivity and specificity over time post inoculation) for commercially available CSF tests
3. Studies to support additional knowledge of efficacy, safety and onset of immunity of the EU live, attenuated marker vaccine candidate 'CP7\_E2 alf' (EU FP6 programme – CSF project SSPE-CT-2003-501599)

## **FMD Diagnostics & Vaccines**

- 1) Validation of FMD diagnostic assays in swine, i.e. 3ABC ELISA, new FMD ELISA's under development.
- 2) Efficacy studies of current vaccine candidates

## **SWINE HEALTH – General Swine Disease**

Proposals **must** be submitted in the required format provided with the RFP in order to be considered. **Proposals that do not directly address the targeted priorities list below will not be considered for funding.** Proposals should include the section of the call that they are addressing and provide justification for the proposal to meet the priority objective.

For projects seeking **second-year funding of a previously funded project**, the proposal must include a discussion of progress and accomplishments realized from the research efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted.

All eligible proposals will be reviewed by a panel of peers for scientific soundness and validity. Final funding decisions will be made by the National Pork Board Swine Health Committee. Further enquiries regarding this solicitation can be directed to Lisa Becton by email [lbecton@pork.org](mailto:lbecton@pork.org) or by phone: 515-223-2791.

Endemic diseases of swine can negatively impact producer profitability by reduced feed efficiency and average daily gain, by increased death loss or by increased cost of production to manage diseases. Listed below are targeted areas of focus for the 2014 General Swine Disease call for proposals. The total amount available for general disease research is \$400,000. The general swine disease proposals will be evaluated and funded separately from Foreign Animal Disease (FAD) proposals and **do not** include the study of the PRRS virus. Proposals for the general call should be focused towards understanding the immunology and response to an infection and the development of tools to detect, control, and limit adverse effects from key diseases in swine.

### **Research priorities for 2014:**

#### **Emerging and Endemic Diseases:**

##### **a.) Porcine Respiratory Disease Complex - PRDC**

###### **Mycoplasma**

- Study the epidemiology and immune response for *Mycoplasma hyorhinis* and *Mycoplasma hyosynoviae* in order to have effective strategies for management and control

- Study the epidemiology of *Mycoplasma hyopneumoniae* in mid to late grow-finish populations and interaction of maternal antibodies and vaccine (?)

### Influenza

- Provide seed monies for the development of new or novel vaccine technologies that decrease viral shedding and transmission and provide broad protection against multiple strains

## **b.) Enteric Disease Syndromes**

### Pre and Post-weaning Diarrhea

- Rotavirus
  - ✓ Development of the proper tools for the management and control of Rotavirus
  - ✓ Gain a better understanding of the immunology and molecular genetics of Rotavirus

### Grow/Finish Diarrhea

- *Brachyspira hyodysenteriae* (Colitis)
  - ✓ Development of standard diagnostic protocols that incorporate tests with improved diagnostic capabilities (i.e. improved PCR): sensitivity/specificity
  - ✓ Development of effective elimination strategies

## **c.) Porcine Epidemic Diarrhea virus**

- Development of protocols to assess and optimize immunity in sows utilizing traditional feedback methods:
  - ✓ Does feedback provide consistent immunity against subsequent re-infection and how can that immunity best be defined and measured using tests available (IFA)?
  - ✓ What is the duration of immunity post-feedback?
  - ✓ What is the best protocol for exposing lactating sows to build sufficient immunity and how to detect what antibody level is protective?
  - ✓ What test should be utilized to evaluate the feedback material for effective sow immunity?
  - ✓ Can environmental contamination override natural immunity?
  - ✓ What is the best method to detect antibody in milk and its ability to confer protection to piglets?
- Evaluation of interventions for PED control, management and elimination:
  - ✓ Evaluation of the efficacy of disinfectants for PED in transportation
  - ✓ Provide seed monies to evaluate a vaccine to be used pre-farrow in previously exposed sows to reduce piglet clinical signs and mortality
- Diagnostic testing and surveillance for PED:
  - ✓ Development of standard diagnostic protocols that incorporate tests with improved diagnostic capabilities (i.e. improved PCR): sensitivity/specificity to estimate national prevalence
  - ✓ Development of standardized protocol to perform a swine bioassay with improved sensitivity and specificity
  - ✓ Establish a standard protocol for time to negative testing