NATIONAL PORK BOARD
General Call - 2013

DEADLINE: Tuesday, November 13th, 2012 – 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
HUMAN NUTRITION - Human Nutrition
PORK QUALITY - Pork Quality
PORK SAFETY - Pre-Harvest
PUBLIC-HEALTH - Public Health
SWINE HEALTH – General Swine Disease
SWINE HEALTH - Foreign Animal 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 or 515/223-2750.

STAFF MEMBERS:

ANIMAL SCIENCE	**Chris Hostetler**	**chostetler@pork.org**	**515/223-2606**
ANIMAL WELFARE	**Sherrie Niekamp**	**sniekamp@pork.org**	**515/223-3533**
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SWINE HEALTH – General Disease	**Lisa Becton**	**lbecton@pork.org**	**515/223-2791**
- **Foreign Animal Disease**	**Patrick Webb**	**pwebb@pork.org**	**515/223-3441**

To be considered for committee review, **all proposals must be submitted via the website by 5:00 p.m. CST on Tuesday, November 13th, 2012. See 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 2013.
Notification of grant awards will be done in March 2013.
Project funding will begin May 1, 2013.
Requests for second-year funding must be resubmitted.

ANIMAL SCIENCE

The Animal Science Committee is soliciting proposals in the areas of **Mitigation of High Feed Costs and Mitigation of the Impact of Seasonality on Productivity**. 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 referring to interim or final reports from previously funded research efforts. Proposals will be reviewed by panels for scientific soundness and 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 – Swine Nutrition

Mitigation of High Feed Cost:

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 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 – Animal Science

Mitigation of the Impact of Seasonality on Productivity

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 and, possibly, day length 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, nutrition 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) 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 $275,000 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 required 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 or by phone: 515/223-3533.

1. **Euthanasia -** It is likely that in every swine farm 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.***

    a. 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.
    b. Electrocution
        - 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.
    c. 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) 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.

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

3. **Handling and Transportation of Weaned or Feeder Pigs** – The handling and transport of pigs is a critical element in the swine industry. It is important to understand the pig needs at weaning in order to handle and transport them safely while minimizing adverse effects during and after transport as measured by effects on ADG, ADFI, FE, health status, mortality, and/or incidence of culls. Proposals addressing handling and transportation should address topic suggestions for 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):

    a. 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).
    b. 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.
    c. 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.
    d. 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.

4. **Pain Management –** Specific research topics of interest with regard to production practices are described below (please note that these are **not** in priority order):

    a. Identify and evaluate effective methods of pain mitigation for castration and/or tail docking.
    b. Develop and evaluate potential alternatives or modifications of piglet processing practices that provide for the well-being of the pig.

ENVIRONMENT

The Environment Committee solicits proposals in the following areas. Proposals must be submitted in the attached 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. Research on practical, cost effective methods and technologies to control multiple air emission constituents; including ammonia, hydrogen sulfide, volatile organic compounds, methane, and nitrous oxide; from swine production facilities. Proposals must address a single practice or technology effectiveness in mitigating multiple air constituents.

ENVIRONMENT - Manure

1. Research on practical, cost effective methods and technologies for separating and removing nutrients (nitrogen and phosphorous) out of swine manure and reducing costs for transporting those nutrients for field application or other uses.
2. Research on practical, cost effective methods and technologies for removal of accumulated bio-solids from lagoon bottoms.
3. Research on identifying the fate and transport of animal pharmaceuticals and antibiotics that may be present in manure from commercial scale swine production units as a result of land application of manure following standard and accepted land application practices including surface application without incorporation, surface application followed by incorporation and injection at agronomic rates.
4. Meta-analysis of the effectiveness of current swine industry best management practices for manure management and land application in meeting current and proposed numeric water quality standards for nutrients.

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 $200,000 to fund human nutrition related research for **2013 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.

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 or by phone: 515/223-2632.

Proposals are solicited in the following areas only. 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):

1. Assess the effect of consuming pork as part of a daily, higher-protein (>20% of calories from protein) diet to build and maintain lean muscle mass in an population such as, but not limited to, middle aged women (35 to 64 years old).

2. Intervention, feeding study to evaluate the health outcomes (i.e. measures of blood pressure) of lean, fresh pork in a minority population, particularly African Americans, in an age defined adult population, who consume high-quality animal protein at each meal (3x/day).

3. Determine the effect of the distribution of protein throughout the day (approximately 30 grams of protein from pork and other animal sources at breakfast, lunch and dinner vs. approximately 10g at breakfast, 20g at lunch and 60g at dinner) and strength training on muscle mass, strength and secondary outcome measures (e.g., balance, gait, satiety, blood lipids/glucose) among an age defined adult population.

    - There is suggestive "conceptual" evidence that consuming approximately 30g of protein at every meal maximally stimulates muscle protein synthesis (e.g. 30, 30, and 30 g at breakfast, lunch, and dinner) compared to an unequal protein intake meal pattern (e.g. 10, 20, and 60 g).

PORK QUALITY and PORK SAFETY

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 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.

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 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

1) The Committee is seeking proposals to investigate technologies that can rapidly and accurately determine the fatty acid composition of various feedstuffs within a swine diet (or the complete swine diet itself) to get a calculated iodine value. The Committee is also seeking equations developed that use the fatty acid composition of the swine diet to predict the fatty acid composition, for a calculated iodine value, of the carcass fat.

    a. The three carcass fat sampling sites are:
        1. Backfat
        2. Jowl fat
        3. Belly fat
    b. Researchers are encouraged to use one or more of the three methods to determine fatty acids:
        1. GC
        2. NIR
        3. Titration
    c. Researchers are encouraged to include seasonality
    d. Researchers are encouraged to include various pull of pigs from a pen
        1. This is determined by when certain pigs reach market weight out of a pen of pigs, there are typically three pulls within a pen (pigs that grow above pen average are first, pigs that grow average are second and pigs that grow below the pen average are last)

2) The Committee is seeking proposals to determine the variability of the fatty acid composition, for a calculated iodine value, in carcass fat when all factors (genetics, environment, feed, management factors, sex, weight, etc.) are held constant.

a. The three carcass fat sampling sites are:
    1. Backfat
    2. Jowl fat
    3. Belly fat
b. Researchers are encouraged to use one or more of the three methods to determine fatty acids:
    1. GC
    2. NIR
    3. Titration
c. Researchers are encouraged to include seasonality
d. Researchers are encouraged to include various pull of pigs from a pen
    1. This is determined by when certain pigs reach market weight out of a pen of pigs, there are typically three pulls within a pen (pigs that grow above pen average are first, pigs that grow average are second and pigs that grow below the pen average are last)

PORK SAFETY- Pre-Harvest

Needle Evaluation

1) The Committee is seeking proposals to update various needle characteristics. Needle characteristics that should be evaluated are:
    a. Strength of needle before it breaks or bends and then strength after bending and manual re-straightening.
    b. Detectability on Metal and X-Ray Technologies, while trying to encompass multiple needle orientations and pork products
    c. Sharpness of the needle, this should include initial sharpness and then sharpness after 5, 10, 15, 20, 25 and 30 punctures through both a rubber stopper and porcine skin.
    d. Multiple length and gauges need to be evaluated
    e. Cost of needle

PUBLIC HEALTH

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 $550,000 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. 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 or by phone: 515-223-2600.

The research topics below are NOT listed in priority order:

1. **Worker Health and Safety**
    a. Studies to quantify injury risk and identify risk factors associated with occupational exposures to animal movements while performing daily tasks.
    b. Studies to identify effective and practical risk mitigation strategies and interventions to reduce or eliminate occupational exposure to hazards involving animal movements.

2. **Antibiotic Use and Resistance/Antibiotic Alternatives**

    a. Studies to characterize and assess potential risks and risk factors for the selection, expansion and movement of antimicrobials, antimicrobial resistant bacteria, and/or antimicrobial resistance genes on/from swine farms.

        i. Studies should include consideration of the quantities of antimicrobials, bacteria, and genes that would be excreted relative to common regimens used in pig populations.

        ii. Studies should consider the fate and transport in soils, surface water runoff and/or leaching to groundwater when manure is applied to land in accordance with Best Management Practices and Manure Management Plans.

    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 investigate colonization versus infection in target human populations (pork producers, farm workers, other individuals in direct contact with swine), including assessment of the risk for clinical infections in people.

        i. Studies should include characterization of isolates such as, but not limited to, strain and antibiotic resistance patterns.

    b. Studies to develop feasible interventions to reduce the risk of MRSA colonization of workers in pork production facilities.

    c. 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

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 2013 General Swine Disease call for proposals. The total amount available for general disease research is $400,000. Proposals submitted are requested to have a limit of $75,000. The general swine disease proposals will be evaluated and funded separately from Foreign Animal Disease (FAD) proposals. 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. Proposals that do not directly address the targeted priorities list below will not be considered for funding.

SWINE HEALTH – General Swine Disease

Emerging and Endemic Diseases:

1. **Porcine Respiratory Disease Complex - PRDC**

a.) *Mycoplasma*

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

b.) *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

2. **Enteric Disease Syndromes**

a.) Pre and Post-weaning Diarrhea

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

b.) Grow/Finish Diarrhea

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

3. Porcine Circovirus-associated Diseases – PCVAD

- Understanding the clinical effect of PCV vaccine in the sow herd in order to gain stability in downstream growing pig populations and to avoid potential vaccine failures

SWINE HEALTH – Foreign Animal Disease

Foreign Animal Diseases (FAD) can have a significant negative impact to producers. A recent study estimates the annual economic benefit of prevention of Foot and Mouth Disease virus (FMDV) just to the pork industry is worth $137 million U.S. dollars. Research for FAD of Swine should be focused towards development of tools to detect, control, and limit adverse effects from an FAD in swine. This can, but is not

limited to, developing and validating diagnostic tests for oral fluids, meat juice, development of better DIVA vaccine, and development of standard operating guidelines for biosecurity to control foreign animal diseases of swine and prevent area spread. Proposals will be evaluated separately from the General Swine Disease research proposals and total amount of funding available for FAD research is $500,000.

Research guidelines for FAD proposals are outlined below:

1. **Biosecurity**
    - Development of biosecurity tools or strategies that focus on prevention, intervention and/or control of foreign animal diseases in the U.S. swine herd. Issues should relate to the risk of foreign animal disease transmission into and/or within the herd or through transportation through the pork chain.

        a. *Transmission of Foreign Animal Diseases*
            1. Animals/Genetic Material
            2. Fomites, including transmissibility through transportation of live swine, fresh or processed meat products, and diagnostic samples entering the U.S. from other countries
            3. Pig-free or Downtime Issues
            4. Feral swine

        b. *Cleaning and Disinfection*
            1. Swine and Packing Facilities / Equipment
            2. Transport Vehicles, Personnel, and Farm Equipment

2. **Diagnostics**
    a. Development of a rapid "population-based" test for FAD's
    b. Utilization of various types of samples for multiplex testing; for example: meat juice, oral fluids, FTA cards to detect FMDV, CSF or ASF antigen or antibody in swine.
    c. Development of new diagnostic technologies that decrease the time of detection of emerging pathogens for optimal response

3. **Vaccines**
    a. Development of vaccines or other intervention for foreign animal diseases of swine including African Swine Fever, Classical Swine Fever, Foot and Mouth Disease, Swine Vesicular Disease