

NATIONAL PORK BOARD

General Call - 2011

DEADLINE: Tuesday, November 16 – 5:00 pm CST

The National Pork Board is soliciting research proposals dealing with:

A – Environment

B – Swine Health

C – Animal Welfare

D – Pork Safety – Pre-Harvest

H – Public Health

M – Genomics

L – Antimicrobial Use & Resistance

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:

Environment	Allan Stokes	astokes@pork.org	515/223-3447
Swine Health	Lisa Becton	lbecton@pork.org	515/223-2791
Animal Welfare	Sherrie Niekamp	sniekamp@pork.org	515/223-3533
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Public Health	Jennifer Koeman	jkoeman@pork.org	515-223-2633
Genomics	Mark Knauer	mknauer@pork.org	515/223-2606
Antimicrobial Use & Resistance	Paul Sundberg	psundberg@pork.org	515/223-2764

To be considered for committee review, **all proposals must be submitted via the website by 5:00 p.m. CST on Tuesday, November 16, 2010.** 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 late February 2011.

Notification of grant awards will be done in March 2011.

Project funding will begin May 1, 2011.

Requests for second-year funding must be resubmitted.

A. ENVIRONMENT

The Environment Committee solicits proposals *in the following area only*. 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.

Proposals are solicited in the following area only. Proposals submitted that do not relate to these areas will not be evaluated, scored or considered for funding.

1. Quantify the Water Footprint for U.S. Pork Production.

It is expected that proposals will result in the following deliverables.

A. Literature Review

- Complete a literature review relative to research on water use life cycle analysis for the pork production chain from feed crops in the field to consumption of pork products.
- The review should identify whether or not the research reports or papers identified had been peer reviewed, where and when they were published, identify the principle investigator and their organizational affiliation.
- Assist the National Pork Board by attending meetings of industry stakeholders to explain and discuss the findings of the literature review.

B. Pork Chain Scan Level Life Cycle Analysis of Water Use

- Complete a scan level life cycle analysis to quantify water use for each stage of the pork chain in terms of from feed crops in the field to consumption of a 4 ounce serving of boneless pork by a consumer in the U.S.
- Provide data to compare the scan-level water footprint of U.S. pork production to information for other countries.
- Assist the National Pork Board by attending meetings of industry stakeholders to explain and discuss the general pork chain life cycle inventory analyses.

C. Live Swine Production Detailed Life Cycle Analysis

- Develop a detailed water use model for the live swine production phase of the pork chain that can be used to quantify the water use for all types and phases of live swine production from feed crops in the field through to live animal leaving the farm.
- Define and quantify the water use impacts from live swine operations in the U.S. based on per pound of live animal weight leaving the farm.
- Provide data to compare the detailed water use for live swine production to similar information for other meat proteins and selected foodstuffs grown in the U.S.
- Identify potential opportunities and challenges for favorably impacting the water use life cycle for live swine production.
- Provide a written report of the above described efforts including supporting documentation for the detailed live swine production water use life cycle analysis.

- Assist the National Pork Board by attending meetings of industry stakeholders to explain and discuss the detailed live swine production life cycle analyses.

Final Project Report

- a. Provide a final report summarizing the efforts, results and findings from the literature review, scan level life cycle analysis and live swine detailed life cycle analysis efforts.

The above described efforts will be conducted using life cycle assessment methods in a manner compliant with International Standards Organization (ISO) life cycle analysis guidance and standards and will, to the fullest extent possible, utilize open sources of data.

For information regarding this solicitation, please contact Allan Stokes by Email at AStokes@pork.org or by phone at (515) 223-3447.

B. SWINE HEALTH

B1 - General Call:

The general call proposals will be evaluated separately from the Foreign Animal Disease proposals. Funding allocation will be specific to selected general call proposals. Proposals should not exceed \$75,000 per proposal. Proposals for the general call should be geared focused towards development of tools to detect, control, and limit adverse effects from key diseases in swine. This can, but is not limited to, developing and validating diagnostic tests for oral fluids, meat juice, development of better DIVA vaccine or antiviral technology, and development of standard operating guidelines for biosecurity to control diseases of swine. Research guidelines for the general call proposals are outlined below.

Emerging and Endemic Diseases:

a.) Porcine Respiratory Disease Complex - PRDC

Mycoplasma -Specific priorities for *Mycoplasma* research include the following:

- h Elimination
- h Diagnostics
 - ✓ Development of a quantitative diagnostic assay
 - ✓ Improvement of the currently available diagnostic reagents
 - ✓ Development of a test to measure antibody response
- h Strain variability and the effect on virulence and pathogenicity
- h Control
 - ✓ Management factors of the sow herd
 - ✓ Impact of passive transfer
 - ✓ Quantify vaccine effect on colonization

Influenza -Specific priorities for influenza research include the following:

- h Determine role and mechanisms in PRDC
- h Stability issues /New strains /What drives drift and mutations (Can vaccine be a driver?)
 - How often do new H and N internal genes appear?
 - How does strain mutation occur within closed herds?
- h Variation in pathogenicity in different isolates /Effect of herd immunity on virulence variance /What causes the varying virulence of strains in different herds?
- h Role in reproductive disease? (especially the newer strains)
- h Development of practitioner based diagnostics (+/- diagnostics)
- h Vaccination and levels of antigenic difference
- h Discovery of the shedding period in the field (Do carrier animals occur?)
 - where does virus persist within production systems?
 - is virus stable in sequential weaning groups within endemic herds?
 - Discovery of reservoirs of the virus (rodents, wild fowl, etc.)
 - Can virus be eliminated from a within a herd?
 - How does virus spread within hog-dense areas? Does it move similar to PRRS?

Pasteurella and other Bacteria

- h Quantitative epidemiology of PRDC mixed infections
 - Role of secondary bacterial components in PRDC

b.) Breeding Herd Syndromes: Reproductive

- h Influenza
- h Erysipelas

c.) Biosecurity

Research initiatives for biosecurity issues should relate each with the risk of domestic disease transmission into and/or within the herd. Interest in this area is focused on the development of scientifically sound biosecurity protocols through practical field demonstrations.

1.) Transmission of Domestic Diseases

- h Animals/Genetic Material
- h Fomites, including transmissibility through fresh or processed meat products
- h Pig-free or Downtime Issues
- h Feral swine

2.) Cleaning and Disinfection

- h Facilities/Equipment
- h Transport Vehicles, Personnel, and Equipment

d.) Segregated Early Weaning Disease Issues

- *Streptococcus suis*
- *Actinobacillus suis*
- *Haemophilus parasuis*

e.) Enteric Disease Syndromes

Post-weaning Diarrhea

- h Post-weaning *E. coli*

Grow/Finish Diarrhea

- h *Salmonella*
- h Gastric Ulcers
- h *Lawsonia* (Ileitis)
- h *Brachyspira* (Colitis)
- h Hemorrhagic Bowel Syndrome

f.) Porcine Circovirus-associated Diseases- PCVAD-specific projects will be considered

with this RFP

- Identify changes in PCV genome and immune function that may affect the severity of disease and not be covered in current vaccines
- Immunology and co-infections
- Maternal immunity and vaccination efficacy

g.) Novel Disease Detection methodologies

- Utilization of individual sample to accommodate and validate multiple diseases:
 - ✓ PRRS; PCV; Mhyo; PRV; Swine Brucellosis; SIV
- Utilization of various types of samples for multiplex testing; for example: meat juice, oral fluids, FTA cards
- Development of new diagnostic technologies that decrease the time of detection of emerging and endemic pathogens for optimal response

B2 - Foreign Animal Disease Research:

Foreign Animal Disease proposals will be evaluated separately from the General Call research proposals. Funding allocation will be specific to selected FAD proposals. Research for Foreign Animal Diseases of Swine should be geared 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 or antiviral technology, and development of standard operating guidelines for biosecurity to control foreign animal diseases of swine and prevent area spread. Research guidelines for FAD proposals are outlined below:

a.) Biosecurity

Research initiatives for biosecurity issues should relate each with the risk of foreign animal disease transmission into and/or within the herd or through transportation. Interest in this area is focused on the development of scientifically sound biosecurity protocols through practical field demonstrations.

a.) Transmission of Foreign Animal Diseases

- h Animals/Genetic Material
- h Fomites, including transmissibility through fresh or processed meat products
- h Pig-free or Downtime Issues
- h Feral swine

b.) Cleaning and Disinfection

- h Facilities/Equipment
- h Transport Vehicles, Personnel, and Equipment

b.) Diagnostics

- Utilization of individual sample to accommodate and validate multiple diseases:
 - ✓ CSF; ASF; FMDV; other
- 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.
- Development of a rapid “population-based” test for FAD’s
- Development of new diagnostic technologies that decrease the time of detection of emerging and endemic pathogens for optimal response

c.) Develop Vaccine / antivirals for FAD’s of Swine

d.) Development of other intervention and control tools

C. 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 \$150,000 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 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.**

- 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) will not be considered for funding.
- Euthanasia and caretaker psychology - Identify and validate new and novel methods for evaluating the impact of euthanasia administration on caretaker well-being and how these adverse effects can be mitigated. This includes selecting which caretakers should perform euthanasia and how this impacts caretaker psychology and well-being.

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. 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):

- Housing system optimization – Evaluate characteristics of a specific housing system for gestating sows that optimize individual well-being, management/labor, lifetime productivity and reproductive performance/efficiency
 - Comparisons of different space allowances within group housing (with less emphasis on comparing group housing with stall housing).
 - Effect of group size on behavior, physiology, and production measures with emphasis on medium and large group sizes (>20).
 - Evaluate any differences in productivity for sows kept in static and dynamic groups.
 - Determine if low ranking sows cope better in group housing with individual feeders since they have a place to escape.
 - Determine how to reduce competition and aggression for the ESF
 - Determine improved methods for easing the introduction of new sows to an already established group.
 - Evaluate how sows of various common genotypes and breeds fare behaviorally or physiologically (including injury and productivity measures) in small and large group sow housing systems with individual feeding.
- Evaluate the impact that various components of the sow's physical environment have on maternal performance/efficiency, lifetime productivity and overall well-being including behavior, injuries, physiology and productivity
 - Effects of pen shape/design/size in group housing systems
 - Effect of flooring on lameness and leg injury.
 - Effect of feeding area design on injury, physiology and productivity
 - Effect of air quality on the physiology and productivity of group housed sows.
- Determine ideal criteria for creating groups of sows – such as grouping by age, size, degree of relatedness, BCS, etc. - to optimize individual well-being, lifetime productivity and reproductive performance/efficiency.

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. Proposals addressing handling and transportation 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 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 if the use of bedding in moderate and warm temperatures is needed in handling areas and on trailers to prevent slips and falls for short (defined as 3 hrs or less) and intermediate (defined as more than 3 hrs but less than 8) transport distances. Consideration should be given to how many loads of pigs are transported between truck cleaning/disinfecting/drying. Consideration should also be given to different ramp angles.
- Develop and evaluate technologies and/or techniques that contribute to a low stress handling system that promotes self movement by the pigs.
- Develop and evaluate alternative trailer designs/modifications that contribute to the pig's well-being during transport.
- Determine the needs of weaned pigs or feeder pigs during transport in regards to ramp design, ventilation, appropriate handling group size, 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):

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

D.– PORK SAFETY – PRE-HARVEST

The Pork Safety 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.**

The Pork Safety Committee has \$250,000 to fund Pork Safety 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. Multi-disciplinary proposals are encouraged. Novel approaches and concepts are encouraged even if they do not fit into a specific priority area.

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. 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 Steve Larsen by email slarsen@pork.org or by phone: 515/223-2754.

The topics below are NOT listed in priority order:

Carcass Defects

1. A national estimate and an impact of alternative injection methods on carcass defects are needed. Specific research topics of interest with regard to carcass defects are described below (please note that these are **not** in priority order):
 - a. Studies to determine the impact of alternate injection methods and/or techniques (such as hip injection or needle free injection systems) on carcass defects and/or physical hazards. Long term studies in sows and market hogs are desirable.
 - b. A study to determine the estimated national incidence and the estimated cost to the industry for carcass defects. Seasonality needs to be incorporated into the study design. Data needs to be separated out into FSIS condemnation, plant survey or visual observations (objectively or subjectively) and how the economical impact is determined. Carcass defects important to the industry are:
 1. Abscesses
 2. Lung lesions/adhesions - Pleuritis
 3. Skin defects - Mange
 4. Arthritis
 5. Erysipelas

6. Peritonitis

On-Farm Salmonella spp. Control

2. An on-farm evaluation for the control of salmonella spp. in breeding animals and market hogs is needed. Specific research topics of interest with regard to on-farm salmonella spp. control are described below (please note that these are **not** in priority order):
 - a. Studies to determine the impact of on-farm control procedures for the prevalence of salmonella spp. positive pigs arriving at the slaughter facility.
 1. Areas of interest for controlling salmonella spp. are:
 - Pig
 - Feed/Water
 - Environment
 - Rodent and pest
 - Biosecurity
 2. Control procedures for all phases of the production cycle is desirable
 - From birth to market
 3. Control procedures for various production methods is desirable
 - Indoor only
 - Indoor with access to outside
 - Outside only
 - Deep bedding
 - All-in/All-out
 - Continuous Flow
 4. Levels of salmonella spp. for positive tests is desirable
 5. Multiple control procedures are desirable
 6. Multiple salmonella serotypes need to be included in study design

H. PUBLIC HEALTH

The Pork Safety Committee is requesting proposals **in public health and antimicrobial use and resistance areas**. 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 Pork Safety Committee has \$250,000 to fund Public Health and Antimicrobial Use/Resistance 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. Multi-disciplinary proposals are encouraged. Novel approaches and concepts are encouraged even if they do not fit into a specific priority area. Proposals submitted in the area of Public Health should explain for the Pork Safety Committee, that will make funding decisions, how their proposal will impact/protect public health to clearly differentiate it from a proposal addressing swine health issues.

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. 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 topics below are NOT listed in priority order:

PUBLIC HEALTH

Zoonotic Disease:

Influenza

1. Studies of the epidemiology of influenza in pigs with special emphasis on interspecies transmission.
2. Studies to identify potential new interventions for interspecies transfer of influenza virus in pork production facilities.
3. Studies to determine the impact of vaccine use in pigs and/or humans on interspecies transmission of influenza in pork production facilities.

MRSA

1. Studies of the epidemiology of MRSA in the US swine population, including but not limited to:
 - a. Studies to identify risk factors associated with MRSA presence in pigs and on farm.

- b. Studies to identify risk factors leading to transmission of MRSA within and between farms and in the environment.
2. Studies to assess the risk of MRSA presence in pigs in relation to different strategies of antimicrobial use during production.
3. Studies to develop feasible interventions for MRSA to affect the risk of MRSA colonization in pigs and pork production workers.
4. Studies to define the risk of introduction of MRSA to pork products at different points of the pork chain, ending with retail establishments.

Other Zoonotic Diseases

1. Studies to determine prevalence, diagnose, describe the epidemiology of and/or assess the human health risk for emerging and re-emerging zoonotic diseases including but not limited to; Norovirus, Clostridium difficile, Toxoplasma gondii, Hepatitis E and others that may be associated with pigs.
2. Studies to evaluate intervention methods in pork production, including animal vaccination strategies or antimicrobial use, to protect humans from zoonotic diseases that may be present in pork production facilities.

L. ANTIMICROBIAL USE AND RESISTANCE

1. Studies to characterize the selection for resistance for specific bacteria/drug combinations at various levels of antimicrobial use and the return to baseline following discontinuation of use.
2. Studies to characterize movement of antimicrobials, antimicrobial resistant bacteria, and or antimicrobial resistance genes from swine farms and assess potential risks and risk factors of such movement.
 - a. Studies should include consideration of quantities of antimicrobials that would be excreted relative to common dosages used in pig populations.
 - b. Studies should consider fate and transport in soils, surface water runoff and/or leaching to groundwater when manure is land applied in accordance with Best Management Practices and Manure Management Plans considering soil and climactic conditions.

*The Pork Safety Committee has \$200,000 to fund research in the areas of Public Health **and** Antimicrobial Use/Resistance. 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. Novel approaches and concepts are encouraged even if they do not fit into a specific priority area. Proposals submitted in the area of Public Health should explain for the producer committee that will make funding decisions how their proposal may impact/protect public health to help delineate it from a Swine Health proposal.*

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, project expected 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. Further enquiries regarding this solicitation can be directed to Paul Sundberg by email psundberg@pork.org or by phone: 515/223-2764.

The topics below are NOT listed in priority order:

Zoonotic Disease:

Influenza

4. Studies on the epidemiology of influenza in pigs with special emphasis on interspecies transmission.
5. Studies to identify potential interventions for interspecies transfer of influenza virus in pork production facilities
6. Studies to determine the impact of vaccine use in pigs and/or humans on interspecies transmission of influenza in pork production facilities.

MRSA

5. Studies to define the epidemiology of MRSA in the US swine population.
6. Studies to identify risk factors associated with MRSA presence in pigs and on farm.
7. Studies to develop feasible interventions for MRSA to reduce MRSA colonization in pigs and pork production workers.
8. Studies to define the point of introduction of MRSA in pork products within the pork processing plant or at the retail establishment.
9. Studies to examine spread of MRSA within and between farms, and in the environment.

Other Zoonotic Diseases

10. Studies to determine prevalence, diagnose, describe the epidemiology of and/or assess the human health risk for emerging and re-emerging zoonotic diseases including but not limited to; Norovirus, Clostridium difficile, Toxoplasma gondii, Hepatitis E and others that may be associated with pigs.
11. Studies to evaluate intervention methods in pork production, including animal vaccination strategies or antimicrobial use, to protect humans from zoonotic diseases that may be present in pork production facilities.
12. Studies to assess the occupational and/or public health impact of pork production facilities.

M. GENOMICS

Genomics – Validation and application of genomic technologies to enhance rate of improvement of economically important traits in pork production.

Genome Wide Association Studies (GWAS) are required as an aid to increase progress of swine genetic improvement programs. GWAS greatly increases the potential impact for traits that are not easily improved with conventional selection methods (e.g. disease resistance/susceptibility, mortality, nutrient utilization, meat quality, sow lifetime productivity).

Studies must focus on the creation of genomic technologies and products for direct commercial application. Priority will be given to collaborative, multi-disciplinary studies utilizing multiple available resources including public/federal research stations, commercial populations, and existing databases. Investigators are encouraged to leverage other funds when possible. Multiple year funding is not guaranteed, but may be available. The role of the study in meeting the objective to deliver a validated commercially affordable, applicable, and available tool should be clearly defined. Evidence of sufficient statistical power must also be demonstrated in relation to the primary project objectives. Submitted proposals must encompass as many of the following approaches as possible to be considered for funding:

- 1) Identify useful phenotypes for traits of economic importance and difficult to measure (e.g. disease resistance/susceptibility, mortality, nutrient utilization, meat quality, sow lifetime productivity).
 - a) Collect extensive, useful phenotypes for traits of potential economic importance.
 - b) Collect phenotypes for traits of current economic importance.
 - c) Establish a phenotype and DNA repository for past checkoff funded projects including the NPPC Terminal Line Program, NPPC Lean Growth Modeling Study, and NBS Progeny Test.
- 2) Identify and validate existing genomic technologies that explain variability in phenotypes for traits of economic importance.
 - a) Identify genetic markers for associations with studied traits.
 - b) Validate genetic markers and genes for associations in commercial populations.
 - c) Improve the statistical robustness of genomic technologies.
- 3) Develop cost effective methods to aide in technology transfer and implementation into commercial pig populations.
 - a) Strategies that decrease cost of genomic technology.
 - b) Strategies that increase value of genomic technology (e.g. impact on other traits, application across populations).

The Animal Science Committee has \$450,000 to fund swine genomics related research. For information regarding this solicitation, please contact Mark Knauer by email at MKnauer@pork.org or by phone at (515) 223-2606.