



**COOPERATIVE STATE RESEARCH, EDUCATION, AND EXTENSION SERVICE;  
U.S. DEPARTMENT OF AGRICULTURE**

**NATIONAL RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM —  
PORCINE GENOME SEQUENCING PROGRAM**

**SUPPLEMENTAL ANNOUNCEMENT**

**CATALOG OF FEDERAL DOMESTIC ASSISTANCE:** This program is listed in the Catalog of Federal Domestic Assistance under 10.206.

**STAKEHOLDER INPUT:** The Cooperative State Research, Education, and Extension Service (CSREES) is requesting comments regarding this request for applications (RFA) from any interested party. These comments will be considered in the development of the next RFA for the program. Such comments will be used to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)). This section requires the Secretary to solicit and consider input on a current RFA from persons who conduct or use agricultural research, education and extension for use in formulating future RFAs for competitive programs. Comments should be submitted as provided in the **DATES** portions of this announcement.

Written stakeholder comments should be submitted by mail to: Policy, Oversight, and Funds Management Branch; Office of Extramural Programs; USDA-CSREES; STOP 2299; 1400 Independence Avenue, SW; Washington, DC 20250-2299; or via e-mail to: [RFP-OEP@csrees.usda.gov](mailto:RFP-OEP@csrees.usda.gov). (This e-mail address is intended only for receiving comments regarding this RFA and not requesting information or forms.) In your comments, please state that you are responding to the National Research Initiative Competitive Grants Program Porcine Genome Sequencing RFA.

**DATES:** Optional letters of intent to apply, if submitted, must be received by close of business (COB) (5:00 p.m. Eastern Time) on July 18, 2005. Applications must be received by COB on August 18, 2005. Applications received after this deadline will not be considered for funding. Comments regarding this RFA are requested within six months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

**EXECUTIVE SUMMARY:** CSREES requests applications for the National Research Initiative (NRI) Competitive Grants Program — Porcine Genome Sequencing Program for fiscal year (FY) 2005. The amount available for support of this program in FY 2005 is \$5 million. An additional \$5 million in support for this program is anticipated in FY 2006.

This notice identifies the objectives for the NRI Porcine Genome Sequencing Program, the eligibility criteria for projects and applicants, and the application forms and associated instructions needed to apply for a NRI grant. CSREES additionally requests stakeholder input from any interested party for use in the development of the next RFA for this program.

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## **PART I—GENERAL INFORMATION**

### **A. Legislative Authority and Background**

The authority for this program is contained in 7 U.S.C. 450i(b). Under this program, subject to the availability of funds, the Secretary may award competitive research grants, for periods not to exceed five years, for the support of research projects to further the programs of the USDA.

In FY 2004, Section 733 of the General Provisions of the Consolidated Appropriations Act, 2004 Division A of Pub. L. 108-199) provides CSREES with the authority to use up to twenty percent of the amount made available in the Act for the National Research Initiative Competitive Grants Program (NRI), to carry out a competitive grants program under the same terms and conditions as those provided in Section 401 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7621).

Section 401 of AREERA authorizes the Secretary of Agriculture to establish a research, extension, and education competitive grants program to address critical emerging U.S. agricultural and rural issues related to future food production; environmental quality and natural resource management; farm income; or rural, economic and business and community development policy. In addition, the Secretary of Agriculture is authorized to make grants that address priority mission areas related to: a) agricultural genome, b) food safety, food technology and human nutrition, c) new and alternative uses and production of agricultural commodities and products, d) agricultural biotechnology, e) natural resource management, including precision agriculture, and f) farm efficiency and profitability, including the viability and competitiveness of small and medium sized dairy, livestock, crop and other commodity operations.

### **B. Purpose and Priorities**

USDA's NRI is soliciting applications for competitively awarded grants to sequence the porcine genome. The NRI is administered by the Competitive Programs (CP) unit of CSREES. The purpose of the NRI is to support high priority fundamental and mission-linked research of importance in the biological, environmental, physical, and social sciences relevant to agriculture, food, and the environment.

The NRI Porcine Genome Sequencing Program will support high-throughput sequencing of the porcine genome. The goal of the Program is to obtain a draft sequence (approximately three-fold sequence coverage) of 90 percent of the porcine genome. This program will contribute to the international effort of the Swine Genome Sequencing Consortium to obtain an approximate six-fold sequence coverage of the porcine genome. The outcome of draft sequencing projects is expected to include generation of high quality sequence data, organization of the sequence reads into contiguous sequences (contigs), draft assembly of the sequence, and deposition of all information into a publicly accessible, preexisting database.

The program described herein was developed within the context of the authorized purposes of USDA research, extension, and education (as defined in 7 U.S.C. 3101) and within the framework of the CSREES Strategic Plan ([http://www.csrees.usda.gov/about/strat\\_plan.html](http://www.csrees.usda.gov/about/strat_plan.html) ).

In addition, the NRI obtains input from Congress, the National Agricultural Research, Education, and Extension Advisory Board and a number of university, scientific, and agricultural committees and organizations. However, since the NRI supports investigator-initiated research, the scientific community ultimately sets forth priorities through the lines of research proposed in response to this document.

## **PART II—AWARD INFORMATION**

### **A. Available Funding**

There is no commitment by USDA to fund any particular application or to make a specific number of awards. Approximately \$5 million is available for awards under this solicitation. An additional \$5 million in support for this program is anticipated in FY 2006.

### **B. Type of Application**

In FY 2005, only new applications may be submitted in response to the NRI Porcine Genome Sequencing Program RFA. New applications are project applications that have not been previously submitted to any of the program areas in the NRI. All new applications will be reviewed competitively using the selection process and evaluation criteria described in Part IV—Application Review Requirement.

### **C. Project Type**

Project budgets may not exceed \$5 million per year. Project periods may range between one (1) and two (2) years. In FY 2005, CSREES plans to make standard grants to grantees who have requested funding for one year and continuation grants for an initial project period of one year to grantees who have requested funding for two years. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public. If these three elements are met, CSREES plans to provide additional support in FY 2006 to fund the second year of previously funded project(s). CSREES will provide applicants funded in FY 2005 with further instructions about submitting applications in FY 2006, however, CSREES does not plan to solicit new applications for the NRI Porcine Genome Sequencing Program in FY 2006. The NRI Porcine Genome Sequencing Program will support research that is conducted by individual investigators, co-investigators within the same discipline, and/or multidisciplinary teams.

### **D. Program Area Description**

The following specific opportunity is provided as a base from which applications can be developed. This description provides boundaries on the scope of the program. The NRI encourages submission of innovative projects that are “high-risk,” as well as innovative applications with potential for more immediate application.

Note to multidisciplinary research teams: The NRI recognizes the value of research performed as a team effort and recommends the following be taken into consideration when assembling a project team and developing an application for funding. To be competitive, the number of objectives and the level of personnel involved in the application should be appropriate to the NRI program and to the activities proposed. A clear management strategy should be provided which identifies the contribution of each member of the team.

### **43.3 Porcine Genome Sequencing Program**

Investigators are encouraged to contact Debora Hamernik, National Program Leader, at (202) 401-4202 with questions about the suitability of proposals or via e-mail at [dhamernik@csrees.usda.gov](mailto:dhamernik@csrees.usda.gov) to arrange a telephone consultation.

Letter of Intent: While not required, it is requested that applicants notify CSREES of their intent to submit applications by sending letters of intent to Debora Hamernik by COB on July 18, 2005. The letter of intent should contain: 1) a descriptive title of the proposed project; (2) names and roles of the PD(s) and other key personnel, along with their institutions; and (3) a brief statement of approaches and objectives (500 words or less). CSREES will not provide applicants with feedback regarding the content of these letters. Failure to submit a letter of intent to apply will not preclude consideration of an application.

This program will support high-throughput sequencing of the porcine genome. The goal of the NRI Porcine Genome Sequencing Program will be to obtain a draft sequence of the porcine genome. A draft sequence is defined as a three-fold sequence coverage of 90% of the genome. This Program will contribute to the international effort of the Swine Genome Sequencing Consortium to obtain an approximate six-fold sequence coverage of the porcine genome. Applicants must address how their approach will be easily integrated with the sequencing efforts of other large-scale, state-of-the-art sequencing facilities. The outcome of draft sequencing projects is expected to include generation of high quality sequence data, organization of the sequence reads into contiguous sequences (contigs), draft assembly of the sequence, and deposition of all information into a publicly accessible, preexisting database.

Research aimed at determining the functions of sequenced genes (i.e., functional genomics) is not within the scope of the NRI Porcine Genome Sequencing Program. Projects involving functional genomics are supported by other programs offered by the NRI, including the Animal Genome Program, Animal Health and Well-Being Program, Animal Reproduction Program, Animal Growth and Nutrient Utilization Program, and the Functional Genomics of Agriculturally Important Organisms Program. To access information about these programs, go to the initial NRI announcement [http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html) .

In recent years, the sequencing of several large mammalian genomes has been supported by various agencies of the Federal government. The capacity to sequence large mammalian genomes has evolved to the point that it is now possible for one, or at most two, state-of-the-art sequencing facilities to sequence a mammalian genome in one to three years, and there are few compelling reasons to divide a genome project among many sequencing facilities. These experiences have shown that efficiency is obtained by undertaking large sequencing projects in established, high-throughput, state-of-the-art sequencing facilities.

The features of a state-of-the-art, large-scale sequencing facility are: 1) an automated production pipeline with a minimum throughput of 20 million attempted reads per year and a success rate of at least 85 percent (successful reads is defined as having a minimum of 100 high quality bases,

i.e., bases with quality scores of 20 using the phred base-calling program, or an equivalent); 2) an overall average read length for successful reads of at least 550 high quality bases; 3) a high read pairing rate, if a strategy using paired end reads is employed; 4) a cost per attempted production read of \$1.10 or less (production read costs considered here are inclusive of amortized equipment, technology development, informatics, and indirect costs, as detailed below); 5) the ability to produce both high quality draft genome assemblies (including the ability to use multiple genome sequencing strategies, such as clone-based and whole genome shotgun approaches, or more effective sequencing strategies; the ability to adapt and modify approaches as technology demands on the sequencing facility change; and the ability to assemble genomic sequence at all scales); 6) integrated bioinformatics capabilities to support production, including systems and database administration, laboratory information management, and data handling and deposition; 7) the ability to perform primary annotation of genomic sequence to maximize its utility for the biological community; 8) a proven track record in rapidly and efficiently releasing both sequence and trace data to public repositories; and 9) a high degree of flexibility and the ability to interact with other publicly funded large-scale sequencing facilities, public databases, genome analysis experts, physical mapping groups, and other entities with whom it may be necessary to integrate to be maximally productive in contributing to the porcine genome sequencing project.

The NRI Porcine Genome Sequencing Program expects rapid release of genomic data and materials. Applicants must comply with the National Human Genome Research Institute (NHGRI), National Institutes of Health, Department of Health and Human Services policy on release of sequence data which is available at:

<http://www.genome.gov/page.cfm?pageID=10000910>. Applications should contain a plan for data release which addresses each of the following items: 1) release of sequence read and trace data; 2) release of assembled projects (large-insert clone assemblies); 3) release of whole genome shotgun assemblies; 4) release of annotation performed by the sequencing facility; 5) availability of software developed with funds from this award, if any; and 6) availability of resources developed with funds from this award (e.g., 10 kb libraries or fosmids), if any.

In the absence of specific biological information, genomic DNA sequence information may not be patented, but must be released into the public domain where it will be freely available for use by the entire research community. This policy is consistent with that described by the NHGRI (see: <http://www.genome.gov/10000926>). Applicants are reminded that the grantee is required to disclose each subject invention to the Federal Agency providing research funds within two months after the inventor discloses it in writing to grantee personnel responsible for patent matters (see [www.iedison.gov/](http://www.iedison.gov/)). Applicants must address their policy regarding intellectual property in their application (see Part IV, B., 5.).

If a project is funded, beginning in the second year of funding, at least one member of each project team will be required to attend annual investigator meetings during the Plant and Animal Genome Meetings in San Diego, CA. Reasonable travel expenses may be claimed as part of the project budget (see Part IV, B., 13.).

### **PART III—ELIGIBILITY INFORMATION**

## **A. Eligible Applicants**

The eligibility requirements for the NRI are as follows: except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, research foundations maintained by colleges or universities, private research organizations with established and demonstrated capacities to perform research or technology transfer, Federal research agencies, and national laboratories are eligible to apply for and receive a competitive grant.

Unsolicited applications will not be considered and applications from scientists at non-United States organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project.

## **B. Cost Sharing or Matching**

There are no matching requirements associated with the NRI Porcine Genome Sequencing Program, and matching resources will not be factored into the review process as evaluation criteria.

## **PART IV—APPLICATION AND SUBMISSION INFORMATION**

### **A. Address to Request Application Package**

Program application materials are available at the CSREES Funding Opportunities website <http://www.csrees.usda.gov/funding/forms.html>. If you do not have access to the web page or have trouble downloading material and you would like a hard copy, you may contact the Proposal Services Unit, Competitive Programs, USDA/CSREES at (202) 401-5048. When calling the Proposal Services Unit, please indicate that you are requesting the RFA and associated application forms for the NRI Porcine Genome Sequencing Program. These materials also may be requested via Internet by sending a message with your name, mailing address (not e-mail) and phone number to [psb@csrees.usda.gov](mailto:psb@csrees.usda.gov). State that you want a copy of the RFA and the associated application forms for the NRI Porcine Genome Sequencing Program.

### **B. Content and Form of Application Submission**

The applications should be prepared following the guidelines and the instructions below. Each application must contain the following elements in the order indicated:

#### **1. General**

Use the following guidelines to prepare an application. Proper preparation of applications will assist reviewers in evaluating the merits of each application in a systematic, consistent fashion:

(a) Prepare the application on only one side of the page using standard size (8 1/2" x 11") white paper, one-inch margins, typed or word processed using no type smaller than 12 point font, and single- or double- spaced. Use an easily readable font face (e.g., Geneva, Helvetica, Times Roman).

(b) Number each page of the application sequentially, starting with the Project Description, including the budget pages, required forms, and any appendices.

(c) Staple the application in the upper left-hand corner. Do not bind. An original and fourteen (14) copies of the application are required along with two (2) additional copies of the Project Summary (Form CSREES-2003) as a separate attachment. Prior to mailing, compare the application with the checklist found at the end of this document to ensure the application is complete.

(d) Include original illustrations (photographs, color prints, etc.) in all copies of the application to prevent loss of meaning through poor quality reproduction.

(e) The contents of the application should be assembled in the following order:

- (1) Proposal Cover Page (Form CSREES-2002)
- (2) Table of Contents
- (3) Project Summary (Form CSREES-2003)

- (4) Project Description (see instructions for page limitations)
- (5) References to Project Description
- (6) Facilities and Equipment
- (7) Appendices to Project Description
- (8) Key Personnel (vitae and publications list)
- (9) Collaborative Arrangements (including letters of support)
- (10) Conflict of Interest List (Form CSREES-2007)
- (11) Results of Prior NRI Support
- (12) Budget (Form CSREES-2004)
- (13) Budget Narrative
- (14) Current and Pending Support (Form CSREES-2005)
- (15) Assurance Statement(s) (Form CSREES-2008)
- (16) Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)
- (17) Personal Data on Project Director(s) (Page B of Form 2002)

## **2. Proposal Cover Page (Form CSREES-2002)**

### **Page A**

Each copy of each grant application must contain a Proposal Cover Page, Form CSREES-2002. One copy of the application, preferably the original, must contain the pen-and-ink signature(s) of the proposing project director (PD) and the authorized organizational representative (AOR), the individual who possesses the necessary authority to commit the organization's time and other relevant resources to the project. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information and signatures) and attach to the Proposal Cover Page (Form CSREES-2002). Any proposed PD or co-PD whose signature does not appear on Form CSREES-2002 or attached additional sheets will not be listed on any resulting grant award. Complete both signature blocks located at the bottom of the Proposal Cover Page form. Please note that Form CSREES-2002 is comprised of two parts – Page A, which is the Proposal Cover Page and Page B, which is the Personal Data on Project Director.

Form CSREES-2002 serves as a source document for the CSREES grant database; it is therefore important that it be accurately completed in its entirety, especially the e-mail addresses requested in Blocks 4.c. and 18.c. However, the following items are highlighted as having a high potential for errors or misinterpretations:

- (a) Type of Performing Organization (Block 6.a. and 6.b.). For Block 6.a., a check should be placed in the appropriate box to identify the type of organization, which is the legal recipient named in Block 1. Only one box should be checked. For Block 6.b., please check as many boxes that apply to the affiliation of the PD listed in Block 16.
- (b) Title of Proposed Project (Block 7.). The title of the project must be brief (140-character maximum, including spaces), yet represent the major thrust of the effort being proposed. Project titles are read by a variety of nonscientific people; therefore, highly technical words or

phraseology should be avoided where possible. In addition, introductory phrases such as “investigation of” or “research on” should not be used.

(c) Program to Which You Are Applying (Block 8.). Enter “NRI”, “Porcine Genome Sequencing Program”, and “43.3” in this block. **Also, in block 8, please identify, if available, the Department of Health and Human Services’ Payment Management System (DHHS-PMS) Payee Identification Number (PIN) that has been assigned to your organization for CSREES awards. This is a four character alpha numeric code used by DHHS-PMS to associate the Entity Identification Number (EIN) with the recipient’s business office where the financial responsibility and accountability for the organization rests. If a PIN has not been assigned to your organization, you will be assigned a DHHS-PMS PIN after an award has been made to your organization.**

(d) DUNS NO. (Data Universal Numbering System) (Block 11.). A DUNS number must be included for the legal recipient named in Block 1. (except applications from individuals). See Part VIII, , J. of the initial NRI announcement ([http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html)) for instructions on obtaining a DUNS number.

(e) Type of Request (Block 14.). Check the box for “New”.

(d) Project Director (PD) (Blocks 16.-19.). Blocks 16.-18. are used to identify the PD and Block 19. to identify co-PDs. If needed, additional co-PDs may be listed on a separate sheet of paper and attached to Form CSREES-2002, the Proposal Cover Page, with the applicable co-PD information and signatures. Listing multiple co-PDs, beyond those required for genuine collaboration, is discouraged.

(g) Other Possible Sponsors (Block 21.). List the names or acronyms of all other public or private sponsors including other agencies within USDA to which your application has been or might be sent. In the event you decide to send your application to another organization or agency at a later date, you must inform the identified CSREES program contact as soon as practicable. Submitting your application to other potential sponsors will not prejudice its review by CSREES; however, submitting the same (i.e., duplicate) application to another CSREES program is not allowed.

### **Page B**

Page B should be submitted only with the original signature copy of the application and should be placed as the last page of the original copy of the application. This page contains personal data on the PD(s). CSREES requests this information in order to monitor the operation of its review and awards processes. This page will not be duplicated or used during the review process. Please note that failure to submit this information will in no way affect consideration of your application.

### **3. Table of Contents**

For consistency and ease in locating information, each application must contain a detailed Table of Contents immediately following the Proposal Cover Page. The Table of Contents should contain page numbers for each component of the application. Page numbering should begin with the first page of the Project Description. A Table of Contents page is included at the end of this RFA for your convenience. It should be used in the preparation of an application.

#### **4. Project Summary (Form CSREES-2003)**

The application must contain a Project Summary, Form CSREES-2003. The summary should be approximately 250 words, contained within the box, placed immediately after the Table of Contents, and not numbered. The names and affiliated organizations of all PDs and co-PDs should be listed on this form, in addition to the title of the project. The summary should be a self-contained, specific description of the activity to be undertaken and should focus on: overall project goal(s) and supporting objectives; plans to accomplish project goal(s); and relevance of the project to the goals of the NRI Porcine Genome Sequencing Program. The importance of a concise, informative Project Summary cannot be overemphasized. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information) and attach to the Project Summary (Form CSREES-2003). (Please check the Standard Research Proposal box on the upper right-hand portion of the form under Proposal Type.)

#### **5. Project Description**

PLEASE NOTE: The Project Description section may not exceed a total of 18 single- or double-spaced pages including figures and tables. This page limitation applies regardless of whether figures or tables are included. All pages, including those with figures and tables, should be numbered sequentially. Applications exceeding this page limitation may be returned without review. This maximum has been established to ensure fair and equitable competition. **For the purposes of this RFA, completed data is defined as any genomic sequence data produced in your center.** The Project Description must include all of the following:

**(a) Prior Experience with Sequence Production.** This section should adequately describe the applicant's past experience in large-scale sequence production, including:

(1) *Shotgun sequence production.* The applicant should describe the current shotgun sequencing pipeline, starting from large-insert clones (hierarchical approach) or genomic DNA (whole genome approach). Discussion should be limited to genomic sequencing capacity, but the facility's total capacity should be included. Discussion must address data throughput, data quality, and cost. Discussion also should include, but not be limited to, the following:

(i) Data generation:

- The amount of genomic shotgun sequence produced in the past twelve months in terms of reads, both the number of attempted reads and the number of successful reads, as well as the frequency of successfully paired end reads from sequencing double ended inserts (if applicable);
- The proportions of the production sequencing that are whole genome shotgun reads and BAC-based shotgun reads;
- The average length of production sequencing reads (in bases of phred 20, or equivalent quality) and the average useable read length;
- The amount of data deposited in a public database (bases deposited in a public nucleotide sequence database and reads deposited in a trace archive);
- The sequencing facility's total current monthly production capacity. This number should be based on an average of the last six months of sequencing and should include the number of attempted and successful reads, the number of base pairs per read of at least phred 20 (or equivalent quality), and the frequency of double end reads (if appropriate);
- Graphs showing (for the past six months) the number of lanes attempted per week, the number of successful lanes per week, and the weekly success rate; and
- The internal metrics (e.g., reads per month, failed lanes, base pairs per lane, etc.) that the sequencing facility has found to be most useful in evaluating and managing progress in sequence production.

(ii) *Sequence assembly*. The applicant should discuss the experience of the sequencing facility in assembling genome sequence as all scales (e.g., large-insert clones through genomes). Any draft genomes that have been deposited to a public database or otherwise made available (including any conditions on the use of pre-publication data) should be included.

(1) *Quality*. The applicant should report their procedures for maintaining and checking the quality of the sequence and sequence assemblies that are produced at all scales (reads, shotgun assemblies, finished sequences, and finished genomes).

(2) *Prior experience in obtaining milestones*. The applicant should discuss their experience in defining and meeting useful milestones for a sequencing project.

(3) *Cost*. The applicant must report the current cost per attempted lane for shotgun sequencing. A description of the process by which the production efforts of the sequencing facility are monitored internally with respect to costs also should be included.

**(b) Projected Sequence Production Plan.** This section comprises the applicant's proposal for participating in the project to sequence the porcine genome.

(1) *Shotgun sequence production and data generation.* The applicant must present a clear plan, including concrete milestones for achieving the proposed level of sequence production and increasing the efficiency of production. All phases of the sequence production pipeline must be addressed, starting with sub-cloning of large clones and/or generation of a whole genome shotgun library through release of the trace data to a trace archive and release of the sequence to a public sequence database. The following should be included:

(i) The number of attempted and successful sequencing reads and definition of a successful read;

(ii) The overall projected throughput of the proposed facility and how it will be attained, increased or maintained;

(iii) Potential bottlenecks or other problems that can be anticipated as well as proposals to address them;

(iv) Timelines and quantitative milestones where appropriate; and

(v) Plans for improving efficiency, including a discussion of expected costs in which costs are expressed in the same way as described above (i.e., as fully loaded costs per read and per finished base). It is imperative that projections of cost reduction be fully justified, to the extent possible based on data provided in the application.

(2) *Informatics.* In this section, the applicant should discuss the following aspects of informatics as they will be applied to the porcine genome sequencing project:

(i) *The informatics infrastructure of the sequencing facility.* The applicant must include a description of the basic informatics infrastructure (including database management, laboratory information management, data handling, data submission, and data release) of the sequencing facility as part of the shotgun-sequencing component discussed above;

(ii) *Assembly.* The applicant must describe how sequence assemblies will be done at different sequencing depths proposed and any additional genome assembly software or capability proposed; and

(iii) *Automated annotation.* The primary, automated annotation process should be described in detail, including what will be done, and where the point of completion and handoff to the community will occur.

(3) *Management Plan.* In this section, the applicant should discuss the following aspects of their management plan as they will be applied to the porcine genome sequencing project:

(i) A significant commitment by the PD is required for successful management of the sequencing facility. A PD for a large-scale sequencing project is expected to devote at least 30 percent effort to the project. If a PD is already devoting more than 30 percent effort to the

existing sequencing facility, an additional 10 percent effort should be committed to the porcine genome sequencing project. The applicant should provide a description of how the porcine genome sequencing project will be integrated into the other sequencing activities of the sequencing facility;

(ii) The overall management plan of the sequencing facility, including workflow, plans for further scale-up to accommodate porcine genome sequencing, divisions of labor and/or responsibility among components, coordination between components, intellectual property policies, appropriate staffing, training, etc; and

(iii) Plans to coordinate efforts with other U.S. and international large-scale sequencing groups and mapping efforts.

## **6. References to Project Description**

All references to works cited should be complete, including titles and all co-authors, and should conform to an acceptable journal format. References are not considered in the page-limitation for the Project Description.

## **7. Appendices to Project Description**

Each Project Description is expected to be complete, however, additions to the Project Description (appendices) are allowed if they are directly germane to the proposed research and are strictly limited to a total of two (2) of the following:

(a) Reprints (papers that have been published in peer-reviewed journals); and

(b) Preprints (manuscripts in press for a peer-reviewed journal must be accompanied by letter of acceptance from the publishing journals).

Manuscripts sent in support of the application should be single-spaced and printed on both sides of the page. Each manuscript must be identified with the name of the submitting organization, the name(s) of the PD(s), and the title of the application, and be securely attached to each copy of the application.

Staff of the NRI will not collate applications or application addenda. Information may not be appended to an application to circumvent the page limitation prescribed for the Project Description. Extraneous materials will not be used during the peer review process.

## **8. Facilities and Equipment**

Facilities and major items of equipment that are available for use or assignment to the proposed project during the requested period of support should be described. In addition, items of nonexpendable equipment necessary to conduct and successfully conclude the proposed project should be listed (including dollar amounts), and, if funds are requested for their acquisition, justified on a separate page and attached to the budget.

## **9. Key Personnel**

The following should be included, as applicable:

- (a) The roles and responsibilities of each PD and/or collaborator should be clearly described; and
- (b) The vitae of the PD and each co-PD, senior associate, and other professional personnel. This section should include a vitae of all key persons who are expected to work on the project, whether or not CSREES funds are sought for their support. The vitae should be limited to two (2) pages each in length, excluding publications listings. The vitae should include a presentation of academic and research credentials, as applicable, e.g., earned degrees, teaching experience, employment history, professional activities, honors and awards, and grants received. A chronological list of all publications in refereed journals during the past four (4) years, including those in press, must be provided for each project member for whom a curriculum vita is provided. Also list only those non-refereed technical publications that have relevance to the proposed project. All authors should be listed in the same order as they appear on each paper cited, along with the title and complete reference as these usually appear in journals.

## **10. Collaborative Arrangements**

If it will be necessary to enter into formal consulting or collaborative arrangements with others, such arrangements should be fully explained and justified. If the consultant(s) or collaborator(s) are known at the time of application, a vitae or resume should be provided. In addition, evidence (e.g., letter of support) should be provided that the collaborators involved have agreed to render these services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application. See instructions in the application forms for completing Form CSREES-2004, Budget.

## **11. Conflict of Interest List (Form CSREES-2007)**

A Conflict of Interest List, Form CSREES-2007, must be provided for all individuals who have submitted a vitae in response to item (9b.) of this part. Each Form CSREES-2007 must list alphabetically, by the last names, the full names of the individuals in the following categories: (a) all co-authors on publications within the past four years, including pending publications and submissions; (b) all collaborators on projects within the past four years, including current and planned collaborations; (c) all thesis or postdoctoral advisees/advisors; and (d) all persons in your field with whom you have had a consulting or financial arrangement within the past four years, who stand to gain by seeing the project funded. This form is necessary to assist program

staff in excluding from application review those individuals who have conflicts of interest with the personnel in the grant application. The program contact must be informed of any additional conflicts of interest that arise after the application is submitted.

## **12. Results from Prior NRI Support**

If the PD or a co-PD has received NRI support in the past five years, information on results from that prior funding is required. This information will be used in the review of the application and is limited in length to one page per award. For each award, list the CSREES award number, the amount and period of support, the title of the project, a summary of the results of the completed work, the long-term effects of these results, and the publications resulting from the NRI award.

## **13. Budget**

### **(a) Budget Form (Form CSREES-2004)**

Prepare the Budget, Form CSREES-2004, in accordance with instructions provided with the application forms. A budget form is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. If a project is funded, beginning in the second year of funding, at least one member of each project team will be required to attend annual investigator meetings during the Plant and Animal Genome Meetings in San Diego, CA. Reasonable travel expenses for at least one project team member to attend the Plant and Animal Genome Meetings in San Diego, CA beginning in the second year of funding may be included in the requested budget. The budget form may be reproduced as needed by applicants. Funds may be requested under any of the categories listed on

the form, provided that the item or service for which support is requested is allowable under the authorizing legislation, the applicable statutes, regulations, and Federal cost principles, and these program guidelines, and can be justified as necessary for the successful conduct of the proposed project. Applicants also must include a budget narrative to justify their budget requests (see section (b) below.) See Part IV, D. for indirect cost information.

### **(b) Budget Narrative**

All budget categories, with the exception of Indirect Costs, for which support is requested, must be individually listed (with costs) in the same order as the budget and justified on a separate sheet of paper and placed immediately behind the Budget form. If consulting, collaborative arrangements, or subcontractual arrangements are included in the application, these arrangements should be fully explained and justified. The rate of pay for any consultant must be included, if known at the time of application. Letters of intent or other evidence should be provided to show that collaborators have agreed to participate. For each arrangement involving the transfer of substantive programmatic work or the provision of financial assistance to a third party, a proposed statement of work, vita, and a budget must be supplied. In multi-state/territory applications, a budget and budget narrative must be included for each state/territory involved. The lead state/territory and each participating state/territory must be identified.

## **14. Current and Pending Support (Form CSREES-2005)**

All applications must contain Form CSREES-2005 listing other current public or private support (including in-house support) to which personnel (i.e., individuals submitting vitae in response to item (9b.) of this part) identified in the application have committed portions of their time, whether or not salary support for person(s) involved is included in the budget. Please follow the instructions provided on this form. Concurrent submission of identical or similar applications to the possible sponsors will not prejudice application review or evaluation by the CSREES. However, an application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded under this program. **Please note that the project being proposed should be included in the pending section of the form.**

### **15. Assurance Statement(s) (Form CSREES-2008)**

A number of situations encountered in the conduct of projects require special assurances, supporting documentation, etc., before funding can be approved for the project. In addition to any other situation that may exist with regard to a particular project, applications involving any of the following elements must comply with the additional requirements as applicable.

#### **(a) Recombinant DNA or RNA Research**

As stated in 7 CFR Part 3015.205 (b)(3), all key personnel identified in the application and all endorsing officials of the proposing organization are required to comply with the guidelines established by the National Institutes of Health entitled, "Guidelines for Research Involving Recombinant DNA Molecules," as revised. If your project proposes to use recombinant DNA or RNA techniques, you must so indicate by checking the "yes" box in Block 20. of Form CSREES-2002 (the Proposal Cover Page) and by completing Section A of Form CSREES-2008. For applicable applications recommended for funding, Institutional Biosafety Committee approval is required before CSREES funds will be released. Please refer to the application forms for further instructions.

#### **(b) Animal Care**

Responsibility for the humane care and treatment of live vertebrate animals used in any grant project supported with funds provided by CSREES rests with the performing organization. Where a project involves the use of living vertebrate animals for experimental purposes, all key personnel identified in an application and all endorsing officials of the proposing organization are required to comply with the applicable provisions of the Animal Welfare Act of 1966, as amended (7 U.S.C. 2131 et seq.), and the regulations promulgated thereunder by the Secretary in 9 CFR Parts 1, 2, 3, and 4 pertaining to the care, handling, and treatment of these animals. If your project will involve these animals, you should check "yes" in Block 20. of Form CSREES-2002 and complete Section B of Form CSREES-2008. In the event a project involving the use of live vertebrate animals results in a grant award, funds will be released only after the Institutional Animal Care and Use Committee has approved the project. Please refer to the application forms for further instructions.

### **(c) Protection of Human Subjects**

Responsibility for safeguarding the rights and welfare of human subjects used in any grant project supported with funds provided by CSREES rests with the performing organization. Guidance on this issue is contained in the National Research Act, Pub. L. No. 93-348, as amended, and implementing regulations promulgated by the Department under 7 CFR Part 1c. If you propose to use human subjects in your project, you should check the “yes” box in Block 20. of Form CSREES-2002 and complete Section C of Form CSREES-2008. In the event a project involving human subjects at risk is recommended for award, funds will be released only after the Institutional Review Board (IRB) has approved the research plan and CSREES has accepted documentation of the IRB approval. Please refer to the application forms for additional instructions.

### **16. Certifications**

Note that by signing Form CSREES-2002 the applicant is providing the certifications required by 7 CFR Part 3017, regarding Debarment and Suspension and Drug-Free Workplace, and 7 CFR Part 3018, regarding Lobbying. The certification forms are included in the application package for informational purposes only. These forms should not be submitted with the application since by signing Form CSREES-2002 your organization is providing the required certifications. If the project will involve a subcontractor or consultant, the subcontractor/consultant should submit a Form AD-1048, Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions, to the grantee organization for retention in their records. This form should not be submitted to USDA.

### **17. Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)**

As outlined in 7 CFR Part 3407 (the CSREES regulations implementing NEPA), the environmental data for any proposed project is to be provided to CSREES so that CSREES may determine whether any further action is needed. In some cases, however, the preparation of environmental data may not be required. Certain categories of actions are excluded from the requirements of NEPA.

In order for CSREES to determine whether any further action is needed with respect to NEPA, pertinent information regarding the possible environmental impacts of a particular project is necessary; therefore, Form CSREES-2006, NEPA Exclusions Form, must be included in the application indicating whether the applicant is of the opinion that the project falls within a categorical exclusion and the reasons therefore. If it is the applicant’s opinion that the proposed project falls within the categorical exclusions, the specific exclusion(s) must be identified.

Even though a project may fall within the categorical exclusions, CSREES may determine that an Environmental Assessment or an Environmental Impact Statement is necessary for an activity, if substantial controversy on environmental grounds exists or if other extraordinary conditions or circumstances are present which may cause such activity to have a significant environmental effect.

## **C. Submission Dates and Time**

### **When to Submit (Deadline Date)**

Optional letters of intent to apply, if submitted, must be received by COB (5:00 p.m. Eastern Time) on July 18, 2005. Applications must be received by COB (5:00 p.m. Eastern Time) on August 18, 2005. Applications received after this deadline will not be considered for funding.

## **D. Funding Restrictions**

Pursuant to Section 710 of the General Provisions of the FY 2005 Consolidated Appropriations Act (Public Law 108-447), indirect costs are limited to 20 percent of the total Federal funds provided under each award. Therefore, the recovery of indirect costs under this program area may not exceed the lesser of the institution's official negotiated indirect cost rate or the equivalent of 20 percent of total Federal funds awarded. Another method of calculating the maximum allowable is 25 percent of the total direct costs.

Funds may not be used for the renovation or refurbishment of research spaces (including energy retrofitting); purchase or installation of fixed equipment in such spaces; or planning, repair, rehabilitation, acquisition, or construction of buildings or facilities.

## **E. Other Submission Requirements**

### **1. What to Submit**

An original and fourteen (14) copies of the application must be submitted. In addition, submit two (2) copies of the application's Project Summary (Form CSREES-2003). All copies of the application and the Project Summary must be submitted in one package.

### **2. Multiple Submissions**

Duplicate, essentially duplicate, or predominantly overlapping applications submitted to one or more program areas within the NRI in any one fiscal year **will be returned without review**. In addition, applicants also may not submit to the NRI an application that is considered duplicate, essentially duplicate, or predominantly overlapping with an application submitted to another CSREES program in the same fiscal year.

### **3. Where to Submit**

Applicants are strongly encouraged to submit completed applications via overnight mail or delivery service to ensure timely receipt by the USDA. The address for hand-delivered applications or applications submitted using an express mail or overnight courier service is:

National Research Initiative Competitive Grants Program  
c/o Proposal Services Unit  
Cooperative State Research, Education, and Extension Service  
U.S. Department of Agriculture  
Room 1420, Waterfront Centre  
800 9<sup>th</sup> Street, SW  
Washington, DC 20024

Telephone: (202) 401-5048

Applications sent via the U.S. Postal Service must be sent to the following address:

National Research Initiative Competitive Grants Program  
c/o Proposal Services Unit  
Cooperative State Research, Education, and Extension Service  
U.S. Department of Agriculture  
STOP 2245  
1400 Independence Avenue, SW  
Washington, DC 20250-2245

The receipt of all applications will be acknowledged by e-mail. Therefore, applicants are strongly encouraged to provide accurate e-mail addresses, where designated, on the Form CSREES-2002. If the applicant's e-mail address is not indicated, CSREES will acknowledge receipt of the application by letter.

If the applicant does not receive an acknowledgment within 60 days of the submission deadline, please contact the program contact. Once the application has been assigned a proposal number, please cite that number on all future correspondence.

## **PART V—APPLICATION REVIEW REQUIREMENTS**

### **A. General**

See initial NRI announcement. ([http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html))

### **B. Evaluation Criteria**

Agricultural research supported under this program shall be designed, among other things, to accomplish one or more of the purposes of agriculture research, education, and extension, subject to the varying conditions and needs of States. Therefore, in carrying out its review, the peer review panel shall take into account the following factors:

#### **1. Scientific merit of the application, consisting of:**

(a) Likelihood that the proposed plan will produce high quality porcine genome sequence based on the plan for sequence production; efforts to monitor and minimize sequencing errors; quality assurance and/or quality control; quality assessment; and use of innovative methodologies to ensure accurate draft sequence assemblies;

(b) Quality of the proposed plan for bioinformatics, including adequacy of the informatic activities, infrastructure/laboratory information management, draft sequence assembly, and primary annotation;

(c) Quality of the proposed plan for release of sequence data, including evidence that the systems are in place to support data release, and the proposed plan for release or distribution of other resources developed under this award; and

(d) Quality of the proposed plan to coordinate efforts with other large-scale sequencing facilities in the U.S. and abroad that may be contributing to the porcine genome sequencing project.

#### **2. Qualifications of proposed project personnel and adequacy of facilities:**

(a) Track record of the PD and other key personnel;

(b) Quality of the existing management at the sequencing facility, including workflow, plans for further scale-up to accommodate porcine genome sequencing, divisions of labor and/or responsibility among components, coordination between components, appropriate staffing, training, etc.;

(c) Plans to coordinate efforts with other U.S. and international large-scale sequencing groups and mapping efforts;

(d) Availability of the facilities, resources, expertise, and technology necessary to perform the research, and the level of institutional commitment; and

(e) Appropriateness of the proposed budget and timeline in relation to the proposed research.

**C. Conflicts of Interest and Confidentiality**

See initial NRI announcement. ([http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html))

## **PART VI—AWARD ADMINISTRATION**

See initial NRI announcement. ([http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html))

## **PART VII—PROGRAM CONTACT**

Applicants and other interested parties are encouraged to contact Debora Hamernik; National Program Leader; Plant and Animal Systems; Cooperative State Research, Education, and Extension Service; U.S. Department of Agriculture; STOP 2220 1400 Independence Avenue, SW; Washington, DC 20250-2220; Telephone: (202) 401-4202; Fax: (202) 401-1602; E-mail: [dhamernik@csrees.usda.gov](mailto:dhamernik@csrees.usda.gov).

## **PART VIII—ADDITIONAL INFORMATION**

See initial NRI announcement. ([http://www.csrees.usda.gov/funding/rfas/nri\\_rfa.html](http://www.csrees.usda.gov/funding/rfas/nri_rfa.html))

**UNITED STATES DEPARTMENT OF AGRICULTURE  
COOPERATIVE STATE RESEARCH, EDUCATION, AND EXTENSION SERVICE  
NATIONAL RESEARCH INITIATIVE PORCINE GENOME SEQUENCING PROGRAM**

**TABLE OF CONTENTS**

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8. Key Personnel (vitae and publications list)		
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16. Personal Data on Project Director(s) (Page B of Form CSREES-2002)	1	

## CHECKLIST

All applications submitted under the NRI must contain the applicable elements outlined in these guidelines. The following checklist has been prepared to assist in ensuring that the application is complete and in the proper order prior to mailing:

### **Proposal Cover Page (Form CSREES-2002)**

- Have all blocks been completed?
- Have all Project Directors and the Authorized Organizational Representative (when required) signed the form?
- Does one copy contain pen-and-ink signatures?
- Have you included a telephone number where a message may be left for you?

### **Table of Contents**

- Are page numbers included for each item?

### **Project Summary (Form CSREES-2003)**

- Has the Project Summary been included, using the form provided?
- Do the name and institution of all Project Directors appear on the form, or on the following page?
- Does it include research objectives?
- Does the Project Summary fit within the designated box on the form?
- Has the box for "Standard Research Proposal" been checked?

### **Project Description**

- Is the project fully described?
- Does this section adhere to the format and page limitations, as specified?
- Does this section begin as page 1, as specified?

### **References to Project Description**

- Are all references cited?
- Are all citations referenced?
- Do all citations contain a title and are they in accepted journal format?

### **Facilities and Equipment**

- Have you given a description of your facilities and equipment, sufficient to indicate that you will be able to carry out this project?

### **Appendices to Project Description**

- Are they limited to two (as described in the instructions) firmly attached to the application?

### **Key Personnel (Vitae and Publication Lists)**

- Are vitae included for all Project Directors, collaborators, and other senior personnel (see instructions)?
- Is the vita current and pertinent?
- Is the publication list complete and limited to the last four years?

### **Documentation from Collaborator(s) or Host Institution (where appropriate)**

### **Conflict-of-Interest List (Form CSREES-2007)**

- Has a list been completed for each person who must submit a C.V.? Does the list include the four categories as appropriate?

### **Budget (Form CSREES-2004)**

- Are annual and summary budgets included?

### **Budget Narrative**

- Are budget items individually justified?

### **Current and Pending Support (Form CSREES-2005)**

- Have all current and pending projects been listed and summarized, **including this one**, for each Project Director listed on the Proposal Cover Page (Form CSREES-2002)?

### **Assurance Statement (Form CSREES-2008, where applicable)**

- Has the project been approved by necessary Institutional Review Board(s)?
- Has the form been signed by the Authorized Organizational Representative (where required)?

### **NEPA (Form CSREES-2006)**

- Has the NEPA form been completed and included?

### **General**

- Have you included the Personal Data on Project Director(s) (Page B of Form CSREES-2002) **only** on the original application?
- Have you contacted the appropriate National Program Leader to discuss the suitability of the proposed work?
- Does the application conform to all format and page limitations and deadline requirements?
- Is there an original and fourteen (14) copies of the application?
- Are all copies complete?