Plant Genome Research Program (PGRP)

FY2004 and FY2005 Competitions

Program Solicitation
NSF 04-510
Replaces Document 02-187

National Science Foundation
Directorate for Biological Sciences

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

January 23, 2004
Individual and Small Group Awards in Plant Genome Research (ISGA-PGR) and Virtual Center Awards in Plant Genome Research (VCA-PGR)

October 08, 2004
FY2005 ISGA-PGR and VCA-PGR .

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Plant Genome Research Program (PGRP)

Synopsis of Program:

This is a two-year program solicitation for the FY2004 and FY2005 Plant Genome Research Program competitions. This program is a continuation of the Plant Genome Research Program that began in FY1998. The goals of this program are to support basic research in plant genomics, and to accelerate the acquisition and utilization of new knowledge and innovative approaches to elucidate fundamental biological processes in plants. The focus is on plants of economic importance and plant processes of potential economic value.

Following the goals described in the new five-year plan for the National Plant Genome Initiative published in January 2003 (http://www.ostp.gov/NSTC/html/npgi2003/index.htm), the FY2004 and FY2005 competitions focus on continued elucidation of genome structure and organization, functional genomics, the identification of functions of a pathway or a cluster of co-regulated genes at a genomic scale, and application of genomics tools to understanding fundamental biological processes in economically important plants. New informatics tools to disseminate, access and analyze massive or dispersed datasets are welcome. Also encouraged is the development of research resources and tools that would enable a broad community of investigators to participate in plant genome research. NSF is especially looking for proposals that are conceptually new and different from many of the already well-supported on-going projects, as well as for proposals from

investigators and institutions that have not participated in this program in the past. In addition, proposals that provide strong educational opportunities that are integrated into the research plan are especially encouraged.

Two kinds of activities will be supported in FY2004 and FY2005: (1) Individual and Small Group Awards in Plant Genome Research (ISGA-PGR) to support individual laboratories or small groups of investigators in plant genomics research, and (2) Virtual Center Awards in Plant Genome Research (VCA-PGR) to support large-scale collaborative research on plant genomics. The Young Investigator Awards in Plant Genome Research (YIA-PGR) will no longer be offered, but eligible researchers are strongly encouraged to apply to the CAREER Program (NSF02-111: http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf02111). Young investigators are eligible to apply to the ISGA-PGR as well.

Cognizant Program Officer(s):

- Dr.Jane Silverthorne, Program Director, Plant Genome Research Program, telephone: (703) 292-8470, email: dbipgr@nsf.gov

- Dr.Robert L Last, Program Director, Plant Genome Research Program, telephone: (703) 292-8470, email: dbipgr@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.074 --- Biological Sciences

Eligibility Information

- **Organization Limit:**

  Proposals are invited from U.S. academic institutions, U.S. non-profit research organizations, and consortia of organizations with appropriate research and educational facilities. A proposal from a multi-organizational consortium must be submitted by the lead organization as a single proposal. When a consortium of eligible individuals or organizations submits a proposal, a single principal investigator must be designated as the project director and a single organization must accept overall management responsibility, including the management of intellectual property, that may result from the proposed research.

  Simultaneous submission of proposals to this program and another federal agency (for example, the USDA National Research Initiative Competitive Grants Program) is permissible with prior written approval of the appropriate program directors at each agency involved.

- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant or Cooperative Agreement
- **Estimated Number of Awards:** 40 - Approximately 40 new awards, pending availability of funds
- **Anticipated Funding Amount:** $38,000,000 Approximately $38M in FY 2004 and FY 2005 for new awards, pending availability of funds

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that deviates from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):

  January 23, 2004

  Individual and Small Group Awards in Plant Genome Research (ISGA-PGR) and Virtual Center Awards in Plant Genome Research (VCA-PGR)

  October 08, 2004

  FY2005 ISGA-PGR and VCA-PGR .

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria apply.

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

TABLE OF CONTENTS

I. INTRODUCTION

The National Science Foundation (NSF) announces its intent to continue support of plant genome research that began in FY1998 as part of the National Plant Genome Initiative (NPGI) [http://www.ostp.gov/NSTC/html/npgireport.html]. The long-term goals of this program are to support research on plant genomics and to accelerate the acquisition and utilization of new knowledge and innovative approaches to the analysis of fundamental biological processes in plants. The program focuses on plants of economic importance and plant processes of potential economic value.

For the last 6 years, the NSF Plant Genome Research Program has followed the initial long-range plan for the NPGI and, working closely with USDA, DOE and NIH, the NSF Program has contributed to tremendous advances in plant genomics and plant sciences. In January 2003, The Interagency Working Group on Plant Genomes, the group that oversees the NPGI, published a new five-year plan entitled "National Plant Genome Initiative: 2003-2008" (http://www.ostp.gov/NSTC/html/npgi2003/index.htm). The new plan builds on significant advances made in the first five years of the NPGI and charts a course for advancing the frontiers of plant sciences through genomics research. The next five years of the PGRP will follow closely the goals described in this plan for the NPGI. The NSF PGRP encourages new, innovative ideas and approaches that will take the science of plant genomics to the next level. Unconventional ideas and high-risk proposals are also welcome. A list of ongoing projects along with their award abstracts can be found at http://www.nsf.gov/bio/dbi/dbi_pgr.htm. This information should be consulted to ascertain whether a proposal being contemplated would add something significantly new to the field.

Proposals that deal with individual genes or small gene families should be sent to other BIO programs (consult BIO Web Pages - http://www.nsf.gov/bio/). Plant genomics proposals with a focus on *Arabidopsis* functional genomics should be sent to the 2010 Project (http://www.nsf.gov/bio/progdes/bio2010.htm). Proposals to sequence plant-associated microbes should be sent to the NSF/USDA Joint Program on Microbial Sequencing (http://www.nsf.gov/bio/progdes/biomgsp.htm). You are encouraged to contact a Plant Genome Program Officer if you are uncertain about the suitability of your proposal for the PGRP.

Simultaneous submission of proposals to this program and another federal agency (for example, the USDA National Research Initiative Competitive Grants Program) is permissible with prior written approval of the agencies involved.

II. PROGRAM DESCRIPTION

The goals of this program are to support basic research in plant genomics, and to accelerate the acquisition and utilization of new knowledge and innovative approaches to elucidate fundamental biological processes in plants. The Program focuses on

plants of economic importance and plant processes of potential economic value.

Several objectives are highlighted in the new NPGI's five-year plan. The current Program Solicitation is formulated taking those objectives and the NSF's mission and strengths into consideration, and encourages proposals aimed at the following scientific objectives:

Continued Elucidation of Genome Structure and Organization

- Detailed genome analysis of a few key plant species
- Genome analysis resources for a broad spectrum of plants of economic importance
- Understanding the structural basis for plant genome organization

Functional Genomics

- Use of available sequence information in reference species to understand the biological role of genomic sequences across species, including coding, regulatory and repeated sequences
- New tools to develop strategies for linking sequences to the biological functions that are unique to plants
- Application of genomics tools to understand fundamental biological processes in economically important plants
- Application of genomic tools to understand fundamental biological plant processes of economic importance, including proteomics, metabolomics, nutritional genomics, and other "omics"
- Expansion of genomics approaches to biodiversity, ecology and ecosystem studies

Bioinformatics

- Development of informatics tools to disseminate, access, and analyze massive amounts of genomics data
- Building of community databases based on standardized operating principles and with standards for interoperability

Integrated into these scientific objectives are education and outreach goals and considerations of broader impacts of plant genome research.

The PGRP will continue to consider research on the genomics of plant-associated microbes including fungi, if addressed within the context of host-microbial interactions. The choice of microbe and host plant(s) for study should be clearly justified in the context of the overall goals of the PGRP. Priority will be given to proposals that address the fundamental biology of plant-microbe interactions, both beneficial and detrimental to the plant, and microbes associated with economically important plants. Proposals focused solely on microbes are outside the scope of the PGRP. Proposers wishing to include microorganisms are strongly encouraged to contact a Plant Genome Research Program Director for guidance prior to submission.

The NPGI's new plan also recognizes that a large body of data and biological resources for the study of plant genomes are available to anyone with Internet access. The availability of these resources should allow any interested researcher or research group, large or small, to apply these genomics resources to their own genomics research. While the PGRP has seen steady broadening of participation in recent years, a large portion of potential participants are not taking advantage of this tremendous funding opportunity. This is a missed opportunity for plant sciences. In order to encourage broader participation, the NSF began two distinct activities - Individual and Small Group Awards in Plant Genome Research (ISGA-PGR) and Virtual Center Awards in Plant Genome Research (VCA-PGR) in FY2003. Both ISGA-PGR and VCA-PGR will continue in FY2004 and FY2005. NSF strongly encourages those institutions and investigators who have not participated in PGRP activities in the past to take part in the FY2004 and FY2005 competitions.

While the Young Investigator Awards in Plant Genome Research (YIA-PGR) activity will no longer be offered by the Program, eligible researchers are strongly encouraged to apply to the CAREER Program (see below). Young investigators are eligible to apply to the ISGA-PGR as well. Please see the Program Description section below for a detailed description for each activity.

Individual and Small Group Awards in Plant Genome Research (ISGA-PGR):

Given the large body of data and resources for genomics research accumulated since the Program started in FY1998, it is now possible for an individual laboratory or a small group of investigators located anywhere in the US to conduct functional genomics research. It is expected that these individual research projects would address a network of genes associated with an economically important trait at a genome-wide scale, and elucidate the function of those genes using genomics tools. Also, proposals that involve proof of concept or method/technique/device development would be appropriate for ISGA-PGR. These are just examples, and are no way meant to be an exclusive list of projects to be considered by ISGA-PGR. Proposals from investigators who have not participated in PGRP activities in the past are especially encouraged.

Virtual Center Awards in Plant Genome Research (VCA-PGR):

VCA-PGR is designed to support large groups of collaborating investigators who wish to address major questions in plant genomics or to develop large-scale research resources for community use. Given the complexity of research efforts in plant genomics, many projects will be multi-faceted and require a group of collaborating investigators with different perspectives and expertise. These collaborative efforts must be designed to advance the field beyond what might be possible through separate, independently conducted projects. Proposals should clearly state why the proposed research is more than a collection of individual research projects. Each member of such a collaborative group must be selected carefully so that he/she will bring a unique element to the project, resulting in a whole that is greater than the sum of its parts. Especially encouraged is an inclusion of investigators who have not participated in PGRP activities in the past, particularly from those institutions in isolated locations, small graduate and undergraduate institutions, undergraduate-only institutions, minority-serving institutions and community colleges.

When a VCA-PGR proposal includes, or is primarily, a community service project, such as production of community research resources or a multi-user facility for the analysis and distribution of biological materials, the proposed activity must be justified in terms of potential demand, efficiency, and cost-effectiveness. In addition, plans for continued maintenance and operation of such a service beyond the initial award period should be described, without assuming long-term NSF support.

Additional Considerations As Appropriate

1. Activities supported by the Plant Genome Research Program should provide an ideal environment for training young scientists in modern research technologies, introducing them to new paradigms in plant biology, and promoting increased participation by members of under-represented groups. Also, they provide an excellent training opportunity in bioinformatics for scientists at all levels. All proposals are expected to integrate research and education. NSF expects proposers to take advantage of the unique opportunities the proposed project provides in terms of education, training and outreach, and incorporate these into the plan. The training and education plan should be well integrated into the proposed research and its scale commensurate with the scale of the proposed activity.
2. When appropriate, issues related to the societal impact of plant genome research should be addressed as an integral part of a proposal. These issues could be integrated into research (e.g., studies on horizontal gene transmission at a genomic scale, the genome-wide basis of pesticide resistance, development of selectable markers for transformation studies), or into an education and outreach activity designed to communicate the significance of the outcomes of plant genome research to society.
3. Plant genome research is actively pursued all over the world. NSF encourages international research collaborations, particularly with investigators from developing countries, and especially where there is a common research focus or system. When applicable, proposed research activities should be coordinated with similar efforts in other countries to maximize efficiency and avoid unnecessary duplication of effort. However, foreign participants should secure support for their component of the collaboration from their own national programs. The PI is encouraged to contact a PGRP Program Director for guidance regarding allowable costs.
4. Private industry has already made a significant investment in plant genomic research. Innovative collaborations with industry are encouraged when they advance the goals of the PGRP. However, NSF funds may not be used to support the industrial collaborators. The PI is strongly encouraged to contact a PGRP Program Director for guidance on how intellectual property issues should be handled.

Other Funding Opportunities in Plant Genome Research at NSF

As part of the PGRP activities in FY2004 and FY2005, the Program is participating in the following NSF-wide Programs.

Faculty Early Career Development (CAREER) Program:

Young Investigator Awards in Plant Genome Research (YIA-PGR), for scientists with recently awarded Ph.D.s who hold an independent position, will no longer be offered. Instead, qualified researchers are encouraged to apply to the CAREER Program. Please note that the proposals should be submitted directly to CAREER following the guidelines set out in NSF02-111. The next deadline for CAREER is July 20, 2004. CAREER proposals will be reviewed according to the CAREER program's guidelines. The minimum award amount for BIO CAREER is $100,000 per year for up to five years. It is expected that the PGRP CAREER project requests will range up to $225,000 per year. NSF expects that PGRP CAREER projects will take full advantage of data, materials, information, expertise, and facilities available through prior PGRP funded projects. Whenever appropriate, the proposer should network with existing PGRP-supported activities. Funds may be requested to visit existing PGRP laboratories, to participate in training opportunities offered by the existing PGRP projects, or to use genome research facilities not available at the proposers institution. In addition to young investigators trained in plant biology, investigators trained in genomics of non-plant systems, informatics, and other disciplines that are critical to advancing the field of plant genome research are strongly encouraged to apply.

Integrative Graduate Education and Research Traineeship (IGERT) Program:

An institution or a group of investigators wishing to establish a graduate research training program with a focus on plant genomics should apply to the Integrative Graduate Education and Research Traineeship (IGERT) Program at NSF. The IGERT program has been developed to meet the challenges of educating U.S. Ph.D. scientists, engineers, and educators with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become the leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. The program announcement for the FY2004 and FY2005 IGERT competitions will be posted at http://www.nsf.gov/home/crssprgm/igert/start.htm. Please note that IGERT proposals should be prepared and submitted in accordance with the IGERT guidelines, not the PGRP guidelines.

III. ELIGIBILITY INFORMATION

VCA-PGR and ISGA-PGR: Proposals are invited from U.S. academic institutions, U.S. non-profit research organizations, and consortia of organizations with appropriate research and educational facilities. A proposal from a multi-organizational consortium must be submitted by the lead organization as a single proposal. When a consortium of eligible individuals or organizations submits a proposal, a single principal investigator must be designated as the project director and a single organization must accept overall management responsibility including the management of intellectual property that may result from the proposed research.

Simultaneous submission of proposals to this program and another federal agency (for example, the USDA National Research Initiative Competitive Grants Program) is permissible with prior written approval of the agencies involved.

IV. AWARD INFORMATION

In FY2004, ISGA-PGR awards will be supported at approximately $300,000 - $500,000 per year for up to 5 years, pending availability of funds. Funding decisions are expected to be made by the end of June 2004 with awards expected to start in or after August 2004. Awards will be made either as standard or continuing grants.

In FY2005, ISGA-PGR awardswill be supported at approximately $300,000 - $500,000 per year for up to 5 years, pending availability of funds. Funding decisions are expected to be made by March 2005 with awards expected to start in or after May 2005. Awards will be made either as standard or continuing grants.

In FY2004, VCA-PGR awarads will be supported at award levels up to approximately $2 million per year for up to five years, pending availability of funds. If the requested levels are higher, it is incumbent upon the proposer to provide a detailed justification. Funding decisions are expected to be made by the end of June 2004 with awards expected to start in or after August 2004. Awards will be made either as continuing grants or cooperative agreements.

In FY2005, VCA-PGR awards will be supported at award levels up to approximately $2 million per year for up to five years, pending availability of funds. If the requested levels are higher, it is incumbent upon the proposer to provide a detailed justification. Funding decisions are expected to be made by March 2005 with awards expected to start in or after May 2005. Awards will be made either as continuing grants or cooperative agreements.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: http://www.nsf.gov/cgi-bin/getpub?gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

Potential proposers are strongly encouraged to carefully read the program solicitation prior to preparation of proposals and to contact the PGRP and consult Program Directors if there are any questions. Proposals that do not meet the guidelines may be returned without review.

Proposals must be submitted by FastLane (see "FastLane Requirements" section below) and must follow the guidelines described in the GPG. The following exceptions and additions apply to proposals submitted to this Program:

Proposal Cover Sheet: In the NSF FastLane system, follow the instructions on proposal preparation. The Project Title must start with "VCA:....", or "ISGA:...", depending on the program the proposal is targeting. When completing the Cover Sheet, click on the GO button at "Program Announcement /Solicitation/ Program Description No." Highlight Plant Genome Research Project and click on the Select button. Your proposal will automatically be assigned to DBI--Plant Genome Research Project. Be sure to complete the remainder of the cover sheet information. Please note that a maximum of 4 Co-PIs can be listed on the cover page. Additional Co-PIs and Senior Personnel should be included in the complete list provided in the Project Summary.

BIO Proposal Classification Form (PCF): Complete the BIO PCF, available on the NSF FastLane system. The PCF is an on-line coding system that allows the Principal Investigator to characterize his/her project when submitting proposals to the Directorate for Biological Sciences. Once a PI begins preparation of his/her proposal in the NSF FastLane system, selects

any program within the Directorate for Biological Sciences as the first or only organizational unit to review the proposal, and saves the cover sheet, the PCF will be generated and available through the Form Preparation screen. Additional information about the BIO PCF is available in FastLane at http://www.fastlane.nsf.gov/a1/BioInstr.htm.

Project Summary (maximum 1 page): The project summary should consist of **three separate parts** in the following order:

(1) a list of senior personnel (PI, Co-PIs, key-collaborators) along with their home institutions;
(2) a summary of the scientific objectives and approaches in 200 words or less; and
(3) expected broader impacts of the proposed research in 200 words or less.

Both the scientific aspects and the anticipated broader impacts must be addressed or the proposal will be returned without review. Please read the Important Notice from the Director/ NSF which can be found at http://www.nsf.gov/pubs/2002/iin127/imptnot.pdf.

Project Description (maximum 15 pages, including figures and tables, for both VCR-PGR and ISGA-PGR proposals): In addition to the standard description in GPG, the guidelines below should be followed, noting that the page allowances listed are part of the overall 15-page maximum:

- **Results from Prior NSF Support** (maximum 5 pages): Only the most relevant prior awards (PGRP or non-PGRP) should be listed in this section for the PIs and Co-PIs listed in the "Project Summary." In addition to results from relevant NSF awards, results from any other closely related awards from the Federal government should be described if applicable.
- **Relevance and justification**: Briefly, but explicitly, explain the relevance of the proposed research to the stated goals of the PGRP.
- **Research plan:** Describe the goals of the project, scientific and technical approaches, including informatics where appropriate, with expected outcomes. Descriptions must be sufficiently detailed to allow adequate review.
- **Plan to integrate research and education:** It is expected that all proposals will include activities that integrate research and education. NSF expects that each proposal will include a thoughtful training/educational component that takes advantage of unique and specific opportunities the proposed project would provide. The scale of the training and educational activities should be commensurate with the scale and scope of the proposed research and integrated well into the overall project plan. The following items must be included: (1) a well designed plan to increase participation of members of under-represented groups that is specific to the proposed project, (2) an education plan, which can be (but is not limited to) a training plan for students at all levels, or an outreach activity for secondary school teachers and students, or a workshop to train other researchers in new concepts or techniques being developed by the project, and (3) a description of how these plans are integrated with the proposed research plan. A clear and realistic discussion of how the plan will be implemented should be included in the proposal. Simply describing general policies and ongoing efforts at the investigators' institutions will not be sufficient.

References Cited: Indicate with an asterisk any cited publications that resulted from prior research funded by NSF for the PI, or Co-PI when following the GPG guidelines for all references cited.

Biographical Sketches (2 pages each): Biographical sketches following the GPG guidelines must be listed for the PI, Co-PIs and each of the Senior Personnel listed on the Project Summary page.

Proposal Budget:
Provide a summary budget and a yearly budget for the duration of the proposed project. When subawards are involved, summary and yearly budgets are required for each subaward. A Budget Justification should be provided. A careful and realistic budget will add to the overall strength of a proposal. Funds for facility construction or renovation may not be requested. Funds to cover the cost of attendance of the PI and one co-PI (the informatics co-PI, where appropriate) at each year's annual awardee meeting in Arlington, VA should be requested.

Current and Pending Support: Current and Pending Support following the GPG guidelines must be listed for the PI, Co-PIs and each of the Senior Personnel listed on the Project Summary page.

Facilities, Equipment and Other Resources: Provide a description of available facilities and priorities for its use. For ISGA-PGR and VCA-PGR projects requiring additional equipment, justify the need for these resources in the context of the innovative work proposed.

Special Information and Supplementary Documentation:
With the exception of (A-4) "Conflict of Interest Document," which should be sent to the Single Copy Document section of FastLane, include the following materials in addition to Project Description. These materials should be labeled clearly and included in the Supplementary Documents section of FastLane.

(A-1) Sharing of Results and Management of Intellectual Property (maximum 3 pages)**:** Describe the management of intellectual property rights related to the proposed project, including plans for sharing data, information, and materials resulting from the award. This plan must be specific about the nature of the results to be shared, the timing and means of release, and any constraints on release. The proposed plan must take into consideration the following conditions where applicable:

- Sequences resulting from high-throughput large-scale sequencing projects (low pass whole genome sequencing, BAC end sequencing, EST's, full-length cDNA sequencing, etc.) must be released according to the currently accepted community standard (e.g. Bermuda agreement) to public databases (GenBank if applicable), as soon as they are assembled and the quality checked against a stated, pre-determined quality standard.
- If the proposed project would produce community resources (biological materials, software, etc.), NSF encourages that they be made available as soon as their quality is checked to satisfy the specifications approved prior to funding. The timing of release should be stated clearly in the proposal. The resources produced must be available to all segments of the scientific community, including industry. A reasonable charge is permissible, but the fee structure must be outlined clearly in the proposal. If accessibility differs between industry and the academic community, the differences must be clearly spelled out. If a Material Transfer Agreement is required for release of project outcomes, the terms must be described in detail.
- When the project involves the use of proprietary data or materials from other sources, the data or materials resulting from NSF-funded research must be readily available without any restrictions to the users of such data or materials (no reach-through rights). The terms of any usage agreements should be stated clearly in the proposal.
- Budgeting and planning for short-term and long-term distribution of the project outcomes must be described in the proposal. If a fee is to be charged for distribution of project outcomes, the details should be described clearly in the proposal.
- In case of a multi-institutional proposal, the lead institution is responsible for coordinating and managing the intellectual property resulting from the PGRP award. Institutions participating in multi-institutional projects should formulate a coherent plan for the project prior to submission of the proposal.

(A-2) Management Plan (maximum 5 pages): This is required for **VCA-PGR** and is optional for **ISGA-PGR**. Each project involving multiple investigators and multiple institutions, or that includes a community service component, must provide a description of the management plan for coordinating the activities of the group, or management of the service aspect.

- This description should include plans for internal means of communication, coordination of data and information management, evaluation and assessment of progress, allocation of funds and personnel, interaction with the customers in a service project, and other specific issues relevant to the proposed activities.
- For multi-investigator projects, each investigator's role should be described. For multi-investigator proposals, a table summarizing the role of each investigator is required. The exact time commitment of each key project member should be indicated in the management plan, regardless of any request for his/her salary from NSF. A project timetable with yearly goals should be provided that includes benchmarks for the major anticipated outcomes and expected dates for their release.
- If the proposal includes a service component such as a multi-user facility or production and distribution of community research resources, a description of how activities within the facility will be managed, how quality will be controlled, how community input will be solicited, what methods will be used to make the community aware of the service to be rendered, and how the community will access resources to be produced, should be provided. The plan should also document institutional commitment to the facility, user fees if anticipated, and plans for long-term support after the

end of the project. For a complex project, appointment of a project manager/administrator is strongly encouraged. The NSF also encourages appointment of an outreach/education coordinator where appropriate. A postdoctoral fellow or a senior graduate student interested in education and outreach activities may be appointed to this role.

(A-3) Coordination with Outside Groups (maximum 2 pages): If the proposed activity is part of a national or international collaborative project, describe the relationship of the proposed activity to the overall collaborative project and how the components will be coordinated. General letters of support are not allowed.

(A-4) A conflict of interest document (in table or spreadsheet form only) should be sent as a single document through the Single Copy Document section of FastLane at the time of proposal submission. Hard copies or e-mail copies will not be accepted. The document should consist of a list, **in the form of a single alphabetized table**, with the full names (Last name, first name, middle initial) of all people having a conflict of interest with any senior personnel (PI and Co-PIs) and any named personnel member whose salary is requested in the project budget. Conflicts to be identified are (1) Ph.D. thesis advisors or advisees, (2) postdoctoral advisors or advisees, (3) collaborators or co-authors for the past 48 months, and (4) any other individuals or institutions with which the investigator has financial ties (please specify type). Members of current Advisory Committees who receive reimbursement for travel or honoraria should be included in this last category.Provide only the allowable and applicable items as noted in the GPG. Include the materials in the FastLane submission by transferring them as .PDF files through the "Supplementary Docs" module of the FastLane system.

Color Images (if applicable): Be advised that NSF cannot accommodate the printing of color images as part of proposal submission through the FastLane system, and submitted proposals that require the use of color or of very high resolution photographic images will necessitate additional steps. Further instructions will be provided after the proposal has been received.

Any material not specifically requested or in excess of the page allowances will be discarded prior to review. It is the submitting institution's responsibility to ensure that the proposal is compliant with the guidelines. Non-compliant proposals may be returned without review.

Single Copy Documents:
In addition to the item A-4 above, other correspondence to the program not intended to be sent to reviewers such as a list of potential reviewers can be sent through the Single Copy Document section of FastLane.

Please note that key project personnel may be required, prior to an award decision, to submit copies of any intellectual property agreements or material transfer agreements they have signed, or are planning to sign, that would impact the unrestricted and timely distribution of the outcomes of the NSF-funded research. Submission of a Single Copy Document will allow these documents to be reviewed by the NSF officials only, and they will remain confidential. Proposers are reminded to identify the program solicitation number in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

Proposers are reminded to identify the program announcement/solicitation number (04-510) in the program announcement/ solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

Other Budgetary Limitations:

Please see IV AWARD INFORMATION above.

C. Due Dates

Proposals must be submitted by the following date(s):

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

January 23, 2004
Individual and Small Group Awards in Plant Genome Research (ISGA-PGR) and Virtual Center Awards in Plant Genome Research (VCA-PGR)

October 08, 2004
FY2005 ISGA-PGR and VCA-PGR .

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: http://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: http://www.fastlane.nsf.gov

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 (NSB 97-72). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued Important Notice 127, Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that

both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the Grant Proposal Guide Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education
One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities
Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc and Panel review. Site visits may be conducted if necessary .

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/cgi-bin/getpub?gpm. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at http://www.gpo.gov.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Dr.Jane Silverthorne, Program Director, Plant Genome Research Program, telephone: (703) 292-8470, email: dbipgr@nsf.gov
- Dr.Robert L Last, Program Director, Plant Genome Research Program, telephone: (703) 292-8470, email: dbipgr@nsf.gov

For questions related to the use of FastLane, contact:

- Ms.Victoria Bryan, Science Assistant, Plant Genome Research Program, telephone: (703) 292-8470, email: biofl@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF E-Bulletin, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's Custom News Service (http://www.nsf.gov/home/cns/start.htm) to be notified of new funding opportunities that become available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at http://www.nsf.gov

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090 or (800) 281-8749
- **To Order Publications or Forms:**

  Send an e-mail to: pubs@nsf.gov

  or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants

as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

National Science Foundation Celebrating 50 Years

The National Science Foundation
4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: 703-292-5111, FIRS: 800-877-8339 | TDD: 703-292-5090 or (800) 281-8749