

**Office of Science
Financial Assistance
Funding Opportunity Announcement
DE-FOA-0000223**

***Plant Feedstock Genomics for Bioenergy:
A Joint Research Funding Opportunity Announcement USDA,
DOE***

SUMMARY:

The U.S. Department of Energy's Office of Science, Office of Biological and Environmental Research (OBER), and the U.S. Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), hereby announce their interest in receiving applications for genomics-based research that will lead to the improved use of biomass and plant feedstocks for the production of fuels such as ethanol or renewable chemical feedstocks. Specifically, applications are sought for fundamental research on plants that will improve biomass characteristics, biomass yield, or sustainability. Systems biology approaches to identify genetic indicators enabling plants to be efficiently bred or manipulated, or research that yields fundamental knowledge of the structure, function and organization of plant genomes leading to improved feedstock characterization and sustainability are also encouraged.

PREAPPLICATIONS

Potential applicants are required to submit a brief preapplication, referencing Funding Opportunity Announcement (FOA) DE-FOA-0000223 for receipt by DOE by 4:30 p.m., Eastern Time, January 4, 2010. Preapplications will be reviewed for conformance with the guidelines presented in the FOA and suitability in the technical areas specified. A response to the preapplications encouraging or discouraging formal applications will be communicated to the applicants by January 20, 2010. Applicants who have not received a response regarding the status of their preapplication by this date are responsible for contacting the program to confirm this status.

Only those preapplicants that receive notification from DOE encouraging a formal application may submit full applications. **No other formal applications will be considered.** Preapplications referencing Funding Opportunity Announcement DE-FOA-0000223 should be sent as PDF file attachments via e-mail to: SCbiomass.genomics@science.doe.gov with "Preapplication DE-FOA-0000223" as the subject. **No FAX or mail submission of preapplications will be accepted.**

Potential applicants must submit a brief preapplication that consists of a cover page plus two to three pages of narrative describing the research objectives, the technical approach(s), and the proposed team members and their roles. The intent in requesting a preapplication is to save the

time and effort of applicants in preparing and submitting a formal project application that may be inappropriate for the program. Preapplications will be reviewed relative to the scope and research needs as outlined in the summary paragraph and in the SUPPLEMENTARY INFORMATION. The preapplication must identify, on the cover sheet, the title of the project, the institution or organization, principal investigator name, telephone number, fax number, and e-mail address. No budget information or biographical data need be included, nor is an institutional endorsement necessary.

APPLICATION DUE DATE: February 18, 2010, 8:00 p.m. Eastern Time

Formal applications submitted in response to this FOA must be received by February 18, 2010, 8:00 p.m. Eastern time, to permit timely consideration of awards.

APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.

IMPORTANT SUBMISSION INFORMATION:

The full text of the Funding Opportunity Announcement (FOA) is located on FedConnect. Instructions for completing the Grant Application Package are contained in the full text of the FOA which can be obtained at: <https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000223&agency=DOE>. To search for the FOA in FedConnect click on “Search Public Opportunities”. Under “Search Criteria”, select “Advanced Options”, enter a portion of the title “Plant Feedstock Genomics for Bioenergy: A Joint Research Funding Opportunity Announcement USDA, DOE”, then click on “Search”. Once the screen comes up, locate the appropriate Announcement.

In order to be considered for award, Applicants must follow the instructions contained in the Funding Opportunity Announcement.

WHERE TO SUBMIT: Applications must be submitted through Grants.gov to be considered for award.

You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in [Grants.gov](http://www.grants.gov).

Registration Requirements: There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See <http://www.grants.gov/GetStarted>. Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called

an MPIN are important steps in the CCR registration process. Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS: When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

Questions: Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. Part VII of the FOA explains how to submit other questions to the Department of Energy (DOE).

All applications should be in a single PDF file.

GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:

Scientific/Technical Program Contact:

SCbiomass.genomics@science.doe.gov

Agency Contacts:

Dr. Catherine M. Ronning
U.S. Department of Energy
Office of Biological and Environmental Research
Phone: (301) 903-9549
Email: catherine.ronning@science.doe.gov

Dr. Ed Kaleikau
United States Department of Agriculture
National Institute of Food and Agriculture
Email: ekaleikau@nifa.usda.gov

SUPPLEMENTARY INFORMATION:

Renewable energy from biomass has the potential to reduce or remove dependency on fossil fuels as well as reduce negative environmental impacts from emissions of greenhouse gases and toxic pollutants. Realizing this potential will require the simultaneous development of high yielding biomass production systems and bioconversion technologies that efficiently convert biomass energy into the forms of energy usable by industry. Most agricultural research to date has focused on enhancing the production of seeds, roots and tubers that are used for food and feed production. However, these improvements in food crops have frequently been directed towards increases in starch content with a corresponding reduction of lignocellulose accumulation. Research applications are solicited in the area of improved fundamental understanding of lignocellulosic accumulation and regulation that will lead to improved

utilization of plant biomass for the production of fuels such as ethanol or renewable chemical feedstocks. This FOA continues a commitment, initiated in 2006, to conduct a fundamental research program in biomass genomics, to provide the scientific foundation to facilitate the use of lignocellulosic materials, either primary material or agricultural residues, for bioenergy and biofuels. The rationale for developing lignocellulosic crops for energy is that less intensive production techniques and poorer quality land can be used for these crops, thereby avoiding competition with food production on better quality land.

Significant advances in breeding, molecular genetics, and genomic technologies provide an opportunity to build upon the existing knowledgebase of plant biology to be able to confidently predict and manipulate their biological function for bioenergy resources. Specific areas of interest include:

- Elucidation of the regulation of gene networks, proteins and metabolites for manipulation of plant feedstocks for improved productivity and sustainability, and improved water use efficiency and nutrient utilization
- Elucidation of the regulation of gene networks, proteins and metabolites for advanced understanding of carbon partitioning and nutrient cycling in plant feedstocks.
- Comparative approaches to enhance fundamental knowledge of the structure, function, and organization of plant genomes leading to innovative strategies for feedstock characterization, breeding or manipulation.

The use or development of model biological systems is acceptable; however, a specific statement must be provided on the linkage of the model to current or future biomass energy crops. The use or augmentation of existing genomic information and resources is strongly encouraged; relevant plants for which preliminary genome information has been obtained at the DOE Joint Genome Institute include maize, poplar, sorghum, soybean, switchgrass, and Brachypodium.

Research that seeks to increase starch content for improved nutrient qualities or to facilitate the digestion and fermentation of starch to produce sugars and other bio-based products or biofuels is not the focus of this FOA. Also, research that seeks to increase grain yield or seed-oil production is not the focus of this FOA.

Projects that would primarily involve field demonstrations or testing or empirical screening for biomass quality characteristics **will not be** considered for funding. Projects **should not** request support for whole genome-scale sequencing; such requests should be submitted separately to the DOE Joint Genome Institute's Community Sequencing Program for an independent merit review (see information at <http://www.jgi.doe.gov/CSP/index.html>).

This FOA strongly encourages individual investigators as well as interdisciplinary teams that assemble a range of expertise into a coordinated approach; for the latter situation, applicants must include a clear plan describing the individual contributions of each participant, as well as the overall management scheme.

Information about the DOE Genomic Science (Genomics:GTL) data release policy, with which awardees will be expected to comply, is available at

<http://genomicscience.energy.gov/datasharing/index.shtml>

For USDA:

- All sequence and expression data must be released to public repositories (e.g., Genbank under the Bermuda standards; GEO under MIAME compliance; etc.). All phenotype and map data must be deposited into an appropriate public database (e.g., major databases of the research community, etc.) in a rapid timeframe after quality control tests.
- Researchers are encouraged to confer with the Crop Curators and Crop Germplasm Committees (CGCs) in the USDA National Plant Germplasm System (NPGS) (www.ars-grin.gov/npgs/index.html) regarding the desirability of depositing genetic stocks and experimental plant populations generated into the NPGS genebanks. Crop curators and the researchers need to define mutual responsibilities for quality assurance, replenishing depleting stock, and the projected duration for the NPGS's commitment to curate these materials.
- Beginning in 2007, CGIAR International Agricultural Research Centers (e.g., CIMMYT, IRRI, CIAT, CIP, ICRISAT, ICARDA) and some national genebanks began distributing germplasm of certain crops accompanied by the FAO International Treaty's Standard Material Transfer Agreement (SMTA). Researchers are encouraged to confer with their host institution regarding how such materials should be handled. For further information, see the International Treaty's web site at http://www.planttreaty.org/smta_en.htm
- For issues about intellectual property policy, applicants should consult the Agency's intellectual property web page at <http://www.nifa.usda.gov/business/awards/intellprop.html>

Information about the program, including prior year award abstracts, is available at

<http://www.genomicscience.energy.gov/research/DOEUSDA/>.

Program Funding

It is anticipated that up to \$6 million total will be available for multiple awards to be made in FY 2010 for the Plant Feedstock Genomics for Bioenergy: A Joint Research Funding Opportunity Announcement-USDA, DOE. The number of awards will be contingent on satisfactory peer review, the availability of appropriated funds, and the size of the awards. Multiple year funding is expected. Applications may request project support for up to three years, with out-year support contingent on the availability of funds, progress of the research, and programmatic needs; it is anticipated that this will reflect a long term commitment to improved use of primary feedstocks or residues for energy resources. Annual budgets are expected to range from \$200,000 to \$500,000 total costs. Neither DOE nor USDA is under any obligation to pay for any costs associated with the preparation or submission of an application. DOE and USDA reserve the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this Funding Opportunity Announcement.

In FY 2010 USDA support for this Plant Feedstock Genomics for Bioenergy solicitation is available through the Agriculture and Food Research Initiative (AFRI) Competitive Grants Program.

Merit Review

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria which are listed in descending order of importance codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the announcement and the agencies' programmatic needs. Note that external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Both Federal and non-Federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Submission Information

The following is a list of essential items that an application must contain:

1. The Cover Sheet SF-424 (R&R) - completed by appropriate officials.
2. Research and Related Budget Page(s) (OMB Number: 4040-0001) using U.S. dollars, with supporting written justification sufficient to evaluate the costs of the proposed project. List and explain cost-sharing arrangements, if any. If the application is for a multi-year period, submit a cumulative budget and one budget page for each year of requested support.
3. Research & Related Other Project Information
 - a. Project Narrative: A detailed description of the proposed project, including the objectives of the project, its relationship to the Office of Science and NIFA programs (<http://www.nifa.usda.usda.gov/fo/funding.cfm>) and the applicant's plan for carrying it out. Use English only.
 - b. Biographical Sketches: Detailed information about the background and experience of the principal investigator(s) including references to publications.
 - c. Facilities and Resources: Include information on the experience of the applicant organization, its facilities and resources.
 - d. Bibliography of Literature.

e. Statement of all current and pending support for the project and all related projects, and description of support for all projects which involve the principal investigator(s) and the period of time and percent of time devoted to each project.

In addition, for this FOA, applications must conform to the following requirements:

f. The Project Narrative comprises the research plan for the project and is limited, including text and figure legends, to **10 pages maximum** (8.5x11-inch pages of single-spaced, standard 11-point type with 1-inch margins pages), exclusive of attachments such as figures or references. It should contain enough background material in the Introduction, including review of the relevant literature, to demonstrate sufficient knowledge of the state of the science. The major part of the narrative should be devoted to a description and justification of the proposed project, including details of the method to be used. It should also include a timeline for the major activities of the proposed project, and should indicate which project personnel will be responsible for which activities.

g. Inclusion of an abstract or project summary on a separate page with the name of the applicant, mailing address, phone number, FAX number, and E-mail listed.

h. Inclusion of a Table of Contents.

i. Inclusion of signed letters of intent from collaborators (briefly describing the intended contribution of each to the research), and short curriculum vitas for the applicant, collaborators, and any co-PIs.

j. Inclusion of a Conflict of Interest Document (no page limit): This document should be provided in table or spreadsheet form only as an appendix to the full application at the time of submission. 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) collaborators or co-authors for the past 48 months, including postdoctoral advisors or advisees, and (3) any other individuals or organizations 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.

k. Inclusion of a plan that describes how the project results or resources will be disseminated in a timely manner and in an accessible and usable form to the broader scientific community.

DOE Eligibility Criteria: Applicants from U.S. Colleges and universities, non-profit organizations, for-profit commercial organizations, state and local governments, and unaffiliated individuals. Researchers from other Federal agencies are encouraged to submit a preapplication referencing this FOA DE-FOA-0000223; if a formal proposal is encouraged, additional submission information will be provided.

USDA Eligibility Criteria: The Secretary may award grants to State agricultural experiment stations; colleges and universities; university research foundations; other research institutions and organizations; Federal agencies; national laboratories; private organizations or corporations; individuals; or any group consisting of two or more of the aforementioned entities. Applications from scientists at non-U.S. 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.

The Catalog of Federal Domestic Assistance (CFDA) number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605. The CFDA number for the USDA program is 10.310, Grants Agricultural Research - Competitive Research Grants.

Posted on the Office of Science Grants and Contracts Web Site
December 8, 2009.