

**Office of Science  
Financial Assistance  
Funding Opportunity Announcement  
DE-PS02-07ER07-03**

***Plant Feedstock Genomics for Bioenergy:  
A Joint Research Solicitation - USDA, DOE***

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), Cooperative State Research, Education, and Extension Service (CSREES), National Research Initiative (NRI) Competitive Grants Program 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 that will facilitate lignocellulosic degradation. 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 Program Solicitation DE-PS02-07ER07-03 for receipt by DOE by 4:30 p.m., Eastern Time, November 13, 2006.** Preapplications will be reviewed for conformance with the guidelines presented in this Solicitation and suitability in the technical areas specified in this Solicitation. A response to the preapplications encouraging or discouraging formal applications will be communicated to the applicants by **December 7, 2006.** 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 or USDA encouraging a formal application may submit full applications. **No other formal applications will be considered.**

Preapplications referencing Program Solicitation DE-PS02-07ER07-03 should be sent as PDF file attachments via e-mail to: **SCbiomass.genomics@science.doe.gov** with "Preapplication DE-PS02-07ER07-03" as the subject. **No FAX or mail submission of preapplications will be accepted.**

Potential applicants must submit a brief preapplication that consists of two to three pages of narrative describing the research objectives, the technical approach(s), and the proposed team members and their expertise. 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 should 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:** January 30, 2007, 8:00 pm, Eastern Time

Applications must be submitted using [Grants.gov](http://Grants.gov), the Funding Opportunity Announcement can be found using the CFDA Number, 81.049 or the Funding Opportunity Announcement number, DE-PS02-07ER07-03. Applicants must follow the instructions and use the forms provided on Grants.gov.

**GENERAL INQUIRIES ABOUT THIS SOLICITATION SHOULD BE DIRECTED TO:**

SCbiomass.genomics@science.doe.gov

**Agency Contacts:**

Dr. Sharlene C. Weatherwax  
U.S. Department of Energy  
Office of Biological and Environmental Research  
Phone: (301) 903-6165  
Email: sharlene.weatherwax@science.doe.gov

Dr. Chavonda Jacobs-Young  
United States Department of Agriculture  
Cooperative State Research, Education, and Extension Service  
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**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 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 topic.

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 Solicitation 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 genes, proteins and metabolites for manipulation of recalcitrant lignocellulosics for improved productivity, processing, or growth characteristics on marginal environmental conditions (e.g. drought tolerance);
- Development of novel technologies to facilitate the analysis and manipulation of cell wall structure and composition for both breeding and basic research;
- Genomic approaches leading to identification of genetic markers enabling more efficient plant breeding or manipulation;
- Enhanced fundamental knowledge of the structure, function, and organization of plant genomes leading to improved feedstock characterization;
- 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.

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

This Solicitation 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.

If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings; these meetings may be held in conjunction with internationally attended genomics meetings (e.g. Plant and Animal Genome) or jointly with other DOE or USDA program meetings (e.g. the Genomics:GTL program meeting)

as specified by the USDA and DOE program managers. Reasonable travel expenses may be submitted as part of the project budget.

Posted on the Office of Science Grants and Contracts Web Site  
October 10, 2006.