

January 17, 2006

## USDA and DOE to Coordinate Research of Plant and Microbial Genomics

-- *Soybean DNA to be Decoded* --

WASHINGTON – The U.S. Departments of Agriculture and Energy announced Monday they will share resources and coordinate the study of plant and microbial genomics, and the Department of Energy will tackle the sequencing of the soybean genome as the first project resulting from the agreement.

"This agreement demonstrates a joint commitment to support high-quality genomics research and integrated projects to meet the nation's agriculture and energy challenges," said Dr. Colien Hefferan, administrator of USDA's Cooperative State Research, Extension and Economics Service (CSREES), who signed the agreement for USDA.

"Both agencies will leverage their expertise and synergize activities involving agricultural- and energy-related plants and microbes," said Dr. Ari Patrinos, Department of Energy Associate Director of Science for Biological and Environmental Research. "We will enhance coordination of proposed sequencing projects through the Biological and Environmental Research Microbial Sequencing Program or the Joint Genome Institute's Community Sequencing Program."

USDA and DOE will establish a framework to cooperate and coordinate agency-relevant plant and microbial genome sequencing and bioinformatics that can serve the needs of the broader scientific community and solve problems that are important to each agency's mission. This agreement could help speed the deployment of emerging technologies, such as improved methods of gene identification and sequence assembly.

The DOE Joint Genome Institute (DOE JGI) will sequence the genome (decode the DNA) of the soybean, *Glycine max*, the world's most valuable legume crop. Soybean is of particular interest to DOE because it is the principal source of biodiesel, a renewable, alternative fuel. Biodiesel has the highest energy content of any alternative fuel and is significantly more environmentally friendly than comparable petroleum-based fuels, since it degrades rapidly in the environment. It also burns more cleanly than conventional fuels, releasing only half of the pollutants and reducing the production of carcinogenic compounds by more than 80 percent. Over 3.1 billion bushels of soybeans were grown in the U.S. on nearly 75 million acres in 2004, with an estimated annual value exceeding \$17 billion, second only to corn and approximately twice that of wheat. The soybean genome is about 1.1 billion base pairs in size, less than half the size of the maize or human genomes.

"The soybean represents an excellent example of how DOE JGI is playing a key role in 'translational genomics,' that is, applying the tools of DNA sequencing and molecular biology to contributing to the development of new avenues for clean energy generation and for crop improvement," said DOE JGI Director Dr. Eddy Rubin. "Effective application of translational genomics to soybean requires detailed knowledge of the plant's genetic code. With this starting material in hand, researchers in academia, industry and agriculture will be better positioned to optimize soybean for the broadest range of uses."

The DOE Joint Genome Institute, supported by the DOE Office of Science, unites the expertise of five national laboratories, Lawrence Berkeley, Lawrence Livermore, Los Alamos, Oak Ridge, and Pacific Northwest, along with the Stanford Human Genome Center to advance genomics in support of the DOE mission related to clean energy generation and environmental characterization and clean-up. JGI's Walnut Creek, Calif. Production Genomics Facility provides integrated high-throughput sequencing and computational analysis that enable systems-based scientific approaches to these challenges.

**CSREES advances knowledge for agriculture, the environment, human health and well-being, and communities by supporting research, education and extension programs in the Land-Grant University System and other partner organizations. For more information, visit <http://www.csrees.usda.gov/>.**

**DOE's Office of Biological and Environmental Research manages a diverse portfolio of research to develop fundamental biological information and to advance technology in support of DOE's missions in biology, medicine and the environment. For more information, visit [http://www.sc.doe.gov/ober/ober\\_top.html/](http://www.sc.doe.gov/ober/ober_top.html/).**