



Feedstocks Genetic Improvement INTERAGENCY WORKING GROUP (IWG) UPDATE TO THE TECHNICAL ADVISORY COMMITTEE (TAC)

Cathy Ronning (DOE-BER) and José Costa (USDA-ARS), co-chairs

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Overview of the Working Group

What is your charter/mission?

The FP-GI IWG is advising, communicating, and coordinating federal research activities relative to the genetic improvement of terrestrial, primarily cellulosic biomass feedstocks. The goal is to further development of superior, sustainable and dedicated biomass feedstocks using the tools of genetics and genomics for the implementation of innovative feedstock breeding programs.

Overview of the Working Group

Who are your members?

John Englert	USDA/NRCS
Bill Goldner	USDA/NIFA
Ken Haymes	EPA
Chad Haynes	DOE/ARPA-e
Neil Hoffman	USDA/APHIS
Randy Johnson	USDA/FS
Ed Kaleikau	USDA/NIFA
David Lee	DOE/ARPA-e
Diane Jofuku Okamuro	NSF/BIO
Jack Okamuro	USDA/ARS
Cathy Ronning*	DOE/SC/BER
Jose Costa*	USDA/ARS

Overview of the Working Group

What are some of your projects/past accomplishments?

- National Plant Genome Initiative Five-Year Plan: 2014–2018 (IWG-PG), published May 2014 (NSTC)
- FY14: USDA-DOE Plant Feedstocks Genomics for Bioenergy funded 10 projects
- USDA-NIFA Feedstock Crop Breeding and Development:
 - Switchgrass: USDA ARS Lincoln, NE, part of CenUSA Coordinated Agricultural Project (CAP) led by Iowa State developed LIBERTY™, first commercially released biomass feedstock switchgrass.
 - Energy cane: USDA ARS Sugarcane Research Unit, Houma, LA and Louisiana State U, members of the LSU-led Sustainable Bioproducts Initiative (SUBI) CAP, developing cold-tolerant energycane; some accessions survive prolonged sub-freezing temperatures.
- DOE BER Workshops: Research for Sustainable Bioenergy: Linking Genomic and Ecosystem Sciences (report published May 2014); Lignocellulosic Biomass for Advanced Biofuels and Bioproducts (June 2014; report published December 2014)
- DOE JGI: bread wheat (*Triticum aestivum*; published Jan 2015); fungal pathogen of poplar *Mycosphaerella* (published March 2015); *Eucalyptus grandis* Genome 2.0 (published Nov 2014); panic grass (*P. hallii*; published Sep 2014); Brachypodium (published Aug 2014)
- Participated in Bioeconomy Initiative, Federal Strategy Workshop (May 2015)

Overview of the Working Group

What are you working on?

- FY15: DOE BER Systems Biology Research to Advance Sustainable Bioenergy Crop Development; awards pending
- FY15: USDA DOE USDA-DOE Plant Feedstocks Genomics for Bioenergy; awards pending
- FY15: DOE ARPA-E Transportation Energy Resources from Renewable Agriculture (TERRA); awards pending
- Participating in implementation of NPGI 2014-2018 plan:
 - Big Data Task Force
 - High-Throughput Phenotyping Task Force
 - Crop Microbiome Task Force
 - Metrics
- DOE Bioenergy Research Centers (BRCs) continue into 8th year
- Interagency MOAs (cyberinfrastructure):
 - NSF iPlant and DOE Systems Biology Knowledgebase (Kbase)
 - NIH NIAID Office of Cyber Infrastructure and Computational Biology and DOE KBase

Focus areas for 2015

What are some areas that would be helpful for the TAC to focus on in 2015?

- Genotype-to-phenotype determination through development of technologies such as high-throughput phenotyping
- Whole systems understanding of biomass crops and surrounding environment, including crop and soil microbiome, to enhance sustainable production of feedstocks
- Analytical tools and infrastructure needs to enable full exploitation of the wealth and diversity of feedstock data
- Mechanisms of biological carbon sequestration and potential markets