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Recombinant biomass crops for biofuels and high value bioproducts

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Abstract

The speaker will address the role of crop genetic engineering, RNAi technology and crop metabolic engineering in expediting the Biofuels market agenda along with a more effective and affordable recombinant Bioproducts agenda. Using the crop genetic engineering, the speaker's team has pioneered systems on changing the genetic structure of certain bioenergy crops for production of high value recombinant Bioproducts in crop waste matter (not in crop seeds, flowers or roots). Her team has aimed at using the bioenergy crop genetic engineering for co-production of high value recombinant commodities in crop waste matter to boost the cellulosic biofuels industry revenues through direct extraction and sales of those novel recombinant products. Examples of cellulosic crop recombinant Bioproducts are; all three microbial cellulases (including a cellulase that is naturally produced by a microbe that lives in rumen of cow, a microbe that converts silage into energy in cow stomach), biodegradable plastic polymer, and a natural human-origin anti-cancer biotech drug. Her team has also used RNAi technology and reduced the level of lignin in maize cellulosic matter to reduce the needs for expensive pretreatment processes, while channeling the energy saved to increase cellulose and hemicellulose of the crop biomass matter. Her recent work concentrates on production of biodiesel oil in bioenergy crop cellulosic matter via metabolic engineering.

Biography

Mariam Sticklen has been a faculty member at MSU for the last 25 years and at the Ohio State University for 4 years. She is the recipient of Michigan State University 2009 Outstanding Faculty Woman Award, the 2008 University of Southern Mississippi and Hattiesburg Clinic Scholar Anti-HIV Speaker Award, and the 2000 Ralph H. Smuckler Award for Advancing Research, Studies and Programs at International Level. She is the inventor of over a dozen of patents, some exclusively licensed by a private sector. Prof. Sticklen has published two books and over 160 other publications. Presently, she serves as the Editor-In-Chief of one refereed journal and as Editorial Board Member of 3 other refereed journals.