

## Bioconversion of Sugars and Aromatics from Engineered Plants to Methyl Ketones

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**Project Goals: The Joint BioEnergy Institute (JBEI) performs fundamental research to improve the conversion of biomass to biofuels and bioproducts. A critical aspect of current research is to maximize the carbon in plant biomass that is converted by microbial hosts. To achieve this goal, we are tuning plant and microbial metabolic engineering to match the substrates provided by the plant with the metabolic capabilities demonstrated by the microbial hosts.**

### Abstract

Current strategies for bioconversion of plant biomass often focus on glucose as the sole substrate. Expanding the substrate range of bioconversion to include both xylose and soluble aromatics from lignin will improve the efficiency of bioconversion. This improvement will enable economic production of highly reduced biofuels and bioproducts obtained from the fatty acid and isoprenoid pathways. Here, we describe the construction of *Pseudomonas putida* strains that produce high titers of medium chain methyl ketones from both sugars and monoaromatic lignin-related compounds. These *P. putida* strains also produce methyl ketones from plants that were engineered for reduced recalcitrance and increased production of soluble monoaromatics. These studies provide a blueprint for linking plant and microbial engineering to maximize bioconversion of carbon in biomass.

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