

INTEGRATING CHEMISTRY AND BIOLOGY TO EXPAND THE BIOMASS PORTFOLIO

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Nearly 100 years ago, the fermentative production of acetone by *Clostridium acetobutylicum* provided a crucial alternative source of this solvent for manufacture of the explosive cordite. Acetone, a product of solventogenic Clostridia's acetone-butanol-ethanol (ABE) fermentation, harbors nucleophilic α -carbons that are amenable to C-C bond formation with the electrophilic alcohols. These inherent functionalities enable coupling chemistry to form higher molecular weight hydrocarbons. This lecture will focus on the integration of biological and chemocatalytic routes to efficiently convert ABE fermentation products hydrocarbons. Tailoring of the chemocatalytic reaction conditions and metabolic engineering of *C. acetobutylicum* permits production of hydrocarbons ranging from galsoline to jet/diesel and lubricant precursors.