

## Transcriptomic Studies of the Response to Exogenous Exposure and Endogenous Production of Biofuel Candidates in E. Coli

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The production of biofuels in microbial systems presents a unique challenge to the host cell. Not only is the cell exposed to the solventogenic fuel molecule itself, the coordinated overexpression of an exogenous pathway presents a large burden on the cell's physiology, both in depleting nutrients and introducing foreign intermediates which could have toxic side-effects. At JBEI, we have focused on the impacts of short-chain alcohols (e.g. butanol) and isoprenoid-based fuels (e.g. isopentenol). Microarrays (in complementary studies with other system-wide "Omics" studies) were used to characterize E. coli's response to these challenges. The general response has been one of a combination of oxidative, hyperosmotic (chaotrophic/ desiccation) and heat shock. In this poster, we present some of these results as well as the unique challenge to engineer the cell to better cope with these stresses.