**303b Production of Ethanol Using Enhanced Ethanol-Resistant Mutants of E. Coli Fbr5**

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Ethanol derived from bacterial fermentation is a potential alternative fuel source. However, the lack of ideal biocatalysts has slowed commercialization of biologically produced ethanol. Among other difficulties, growth of the fermenting organism is inhibited by the toxicity of the fermentation product itself. Thus, development of ethanol tolerant derivatives of biocatalysts such as E. coli FBR5 is highly desirable. We have isolated ethanol resistant FBR5 mutants by subjecting independent cultures to multiple passages of alcohol challenges. Mutants were isolated from normal aerobic spread plates and from the anaerobic regions of pour plates. Pilot fermentations were conducted under anaerobic conditions at 30 °C in LB media supplemented with 120 g/L xylose. One aerobic mutant strain produced approximately 20% more ethanol than the parent FBR5 strain. The highest ethanol yields were obtained with an anaerobic mutant strain, which produced 60% more ethanol than the parent. Fermentation results under optimized conditions and ethanol yields of additional mutants will also be presented