

Genetic Modification of *Escherichia coli* with the Gene *alkB2* to Replicate *Alcanivorax borkumensis* Oil Degradation

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The purpose of this project is to transform *E. coli* with the gene *alkB2* from the marine bacteria *A. borkumensis*; to generate a strain of *E. coli* that can degrade oil in terrestrial environments. Oil spills are bad because they affect the flora and fauna of the environment as well as affecting human health if ingested or inhaled. To genetically engineer a strain of *E. coli* DH5 alpha, the gene *alkB2* was isolated and amplified from *A. borkumensis*. *AlkB2* is essential for degradation of oil. Through cloning techniques, *alkB2* was inserted into a plasmid and then the genetically engineered plasmid was inserted into the DH5 alpha strain. The transformed *E. coli* strain was then exposed to crude oil and assayed for oil degradation after one week through gravimetric techniques. The genetically engineered *E. coli* strain shows an increase in ability to degrade oil however the results were not significant suggesting that the expression of *alkB2* alone is not enough to degrade oil efficiently.