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 stain 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 strand 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.

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