Engineering a Microbial Chimera for Biosynthesis of Green Solvents

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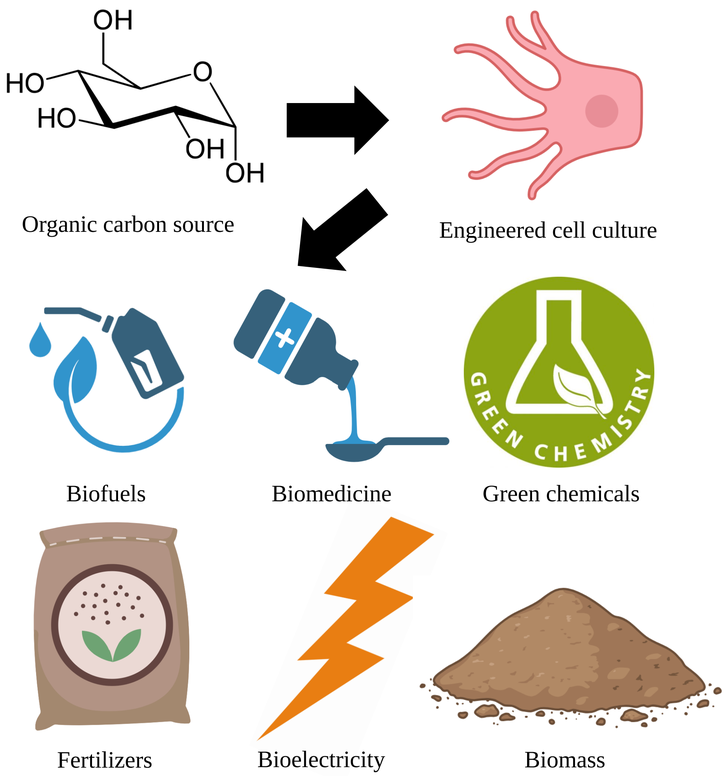
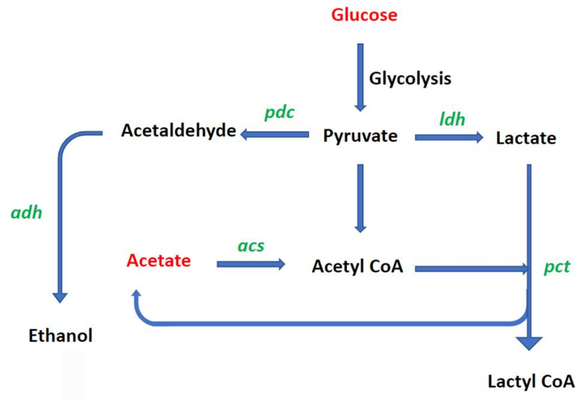
Background

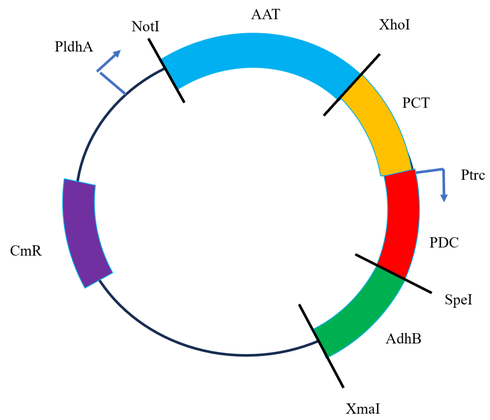
Chimeras are engineered organisms which can be used to produce valuable chemicals. Through genetic engineering, gene insertion and deletion, scientists are able to direct metabolic flux towards a chemical of interest. If engineered correctly, a microbial chimera can be used to synthesize biodegradable, recyclable, petrochemical-free solvents. This would alleviate the strain put on our environment by widespread petrochemical usage for solvent production. Demonstrated in this project is the metabolic engineering and molecular biology approaches required to produce a green solvent producing microbial chimera.



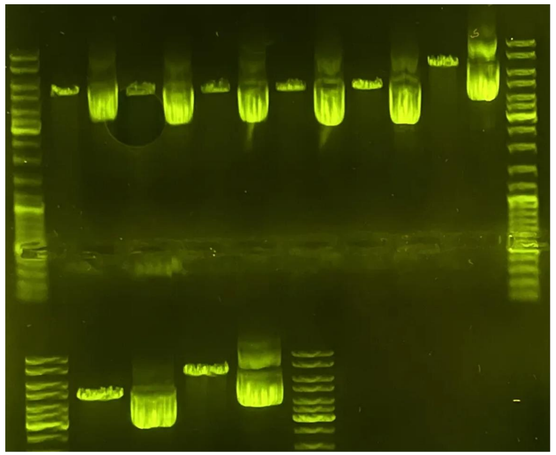
Methods



To develop a culture which can produce ethyl lactate, the above genes must be inserted into C. Glutamicum. Also, the AAT gene catalyzes the conversion of ethanol and lactyl CoA into ethyl lactate.



Results



I have been unable to construct the proper plasmid. I tried Gibson assembly, CPEC, restriction digestion and AQUA cloning. None have worked.

Future Work

I have redesigned new primers to achieve a better result. I will continue forward with Gibson assembly and AQUA cloning.

Acknowledgements

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