



FALL 2021

**Biochemistry and Molecular Biology
Brown Bag Series**

iGEM Team

***“iGEM 2021: De novo Synthesis of α -
Terpineol in Escherichia coli Utilizing a
Dual Plasmid Model”***

Tuesday, October 19, 2021

11:00 AM

135 Oelman Hall

Lab:

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<https://science-math.wright.edu/biochemistry-and-molecular-biology>

Abstract

“iGEM 2021: De novo Synthesis of α -Terpineol in Escherichia coli Utilizing a Dual Plasmid Model”

There is a growing demand to reduce production of chemicals via traditional manufacturing. Industries that would benefit from biomanufacturing of compounds via microorganisms include pharmaceuticals, cosmetics/fragrances, and other commercial industries. One molecule with potential applications in these fields is the monoterpenoid α -terpineol. α -Terpineol has been shown to have many medicinal and insecticidal properties. Here, we focused on biomanufacturing α -terpineol as a potential mosquito repellent. Specifically, we aimed to produce α -terpineol via de novo synthesis in Escherichia coli cells utilizing an inducible dual plasmid system. The engineered strain was produced by transforming one plasmid which contained the upstream enzymes of the mevalonate (MEV) pathway and a second plasmid which was constructed to contain the enzymes geranyl pyrophosphate synthase (GPPS) and α -terpineol synthase (α TS). These enzymes convert the end products of the MEV pathway to α -terpineol. Preliminary results show that the system requires further optimization and troubleshooting to result in α -terpineol production.