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Expression of Porphobilinogen Synthase in Synechocystis 6803

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Poster Presentation P2

EXPRESSION OF PORPHOBILINOGEN SYNTHASE IN SYNECHOCYSTIS 6803

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All natural tetrapyrroles such as Vitamin B₁₂, Heme, and Chlorophyll share a common biosynthetic pathway. They all utilize the compound porphobilinogen as a common precursor to their synthesis. The synthesis of porphobilinogen is catalyzed by the enzyme, porphobilinogen synthase (PBGS). Transcription of the PBGS gene results in a protein that converts the compound 5-aminolevulinic acid to porphobilinogen. The main purpose of this research is to isolate and observe the function of the PBGS gene in *Synechocystis 6803*, a photosynthetic cyanobacterium. In the species *Synechocystis 6803*, PBGS allows for the synthesis of chlorophyll and heme. Through a series of experiments, we hope to isolate the PBGS gene in the cyanobacterium and observe the enzymatic activity of the PBGS protein. We hope to transform electrocompetent *E.coli* cells with a vector containing the PBGS gene of *Synechocystis 6803* and then clone the gene into an expression vector. The expression vector will allow expression of the enzyme, thus the enzymatic activity of the gene can be observed.