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The Expression of Recombinant Hemoglobin in *Escherichia Coli*

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THE EXPRESSION OF RECOMBINANT HEMOGLOBIN IN *ESCHERICHIA COLI*

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Sickle-cell disease is a genetic blood disorder characterized by sickle shaped red blood cells. This is the result of a mutation present in hemoglobin that causes it to polymerize into long fibers. The "sickled" cells have restricted movement through the blood stream and often clog capillaries leading to periodic painful attacks, difficulty transporting oxygen, and organ damage. We would like to develop therapeutics for this disorder by discovering molecules that can bind to hemoglobin and prevent its polymerization.

In order to study this disease and develop therapeutics, it is necessary to express and purify normal adult hemoglobin (Hb) as well as the mutant sickle-cell hemoglobin (HbS). Thus far, we have successfully overexpressed recombinant hemoglobin in *Escherichia coli*. Additionally, we have used site directed mutagenesis to construct a plasmid capable of expressing hemoglobin with the sickle-cell mutation. With this work in place, we will be in a position to start screening for novel therapeutics.