

NON -TECHNICAL ABSTRACT: *(State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)*

The synthesis of many pharmacologically relevant drugs use chemical reactions are often slow, inefficient (only converting a fraction of the starting material), and produce toxic byproducts. We have discovered that bacteria produce enzymes which catalyze chemical reactions that will be useful in the synthesis of pharmacologically relevant drugs (the synthesis of many drugs requires esterase reactions). Our goal is to identify the bacterial enzymes that catalyze these chemical reactions. We will then engineer safe, harmless bacteria to overproduce these enzymes so chemists can produce drugs faster and cheaper without toxic byproducts that can pollute the environment.