

**EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:** 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 relevant to California. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized.

The ultimate goal of this project is to develop a vaccine that provides protection against a broad array of intestinal bacterial infections. We will use sophisticated computational methods to analyze bacterial outer membrane proteins known to be present on the surface of disease-causing *E. coli*, *Salmonella*, and other related bacteria. Because outer membrane proteins are on the surface of the bacteria, vaccines based on these proteins should be powerful for preparing the human immune system to detect and neutralize the bacteria. By comparing the sequence diversity of outer membrane proteins from a variety of related disease-causing bacteria, we will design an artificial version of the protein that can be used as a vaccine against all the various bacteria. This novel protein vaccine will be injected into mice to produce antibodies, and the antibodies will then be tested to see how well they bind to different pathogenic bacteria. If successful, the results of these experiments could be used to develop a broadly effective vaccine to these and other bacterial diseases.