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.

Many biotechnology companies have a need to determine the DNA sequence of microorganisms and to evaluate the DNA sequence using computational approaches. Students learn some of the theoretical concepts involved in characterizing such genome sequences, and sometimes learn "bits and pieces" of how to use computers to identify and characterize genes, but these fragments do not adequately train students in the laboratory and computer skills needed by the biotechnology industry. We propose to develop a set of courses that will take undergraduate and MS students throught the complete process – from how to determine the DNA sequence, to how to "put together" the individual sequences into a single sequence, to how to use computers to analyze the sequences. The curriculum will focus on sequences of bacteria that have important applications and are not being sequenced elsewhere, so the students' results will also provide valuable, new contributions to our scientific knowledge.