

**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 CSU Chico Department of Biological Sciences has redefined curriculum for the BS in Biology that consists of required lower and upper division coursework in a two tier approach supporting introduction, practice, and mastery of student learning outcomes (SLO'S). Required courses supporting the Department SLO in biochemistry, molecular and cellular biology includes the introductory course Biology 151 and a new second tier course Biology 412. We would like to employ a set of connected, student-driven, inquiry-based lab exercises in the first year and second tier courses that feeds the first year experience and allows for growth in student learning towards mastery of SLO's. After careful screening of a number of topics for student inquiry with a list of desired criteria, we propose a new lab in protein function. In the proposed new four period lab students, after learning of the role of proteins in cells students will design and carryout experiments to test their hypotheses of protein function. Students progressing in our program will study the same protein in the second tier course by insiteful modification of the gene for the protein in an attempt to predictably alter its function. Through their lab experiences students will have developed skills in protein design, valuable for employment within the biotechnology industry. California benefits with the increased skill base of its citizens.