

**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 primary goal of this project is to develop and test a system for producing, and subsequently purifying, large amounts of foreign proteins including therapeutic antibodies, vaccines and industrial enzymes in tomato fruit. This has the potential to decrease the cost and increase the availability of a range of proteins including vaccines and many effective therapeutics that are currently expensive and difficult to produce. Through three years of funding from this program we have made significant progress in developing this system and have begun harvesting and analyzing fruit from transgenic plants that are allowing us to refine this expression system. In the work proposed here we will analyze these and subsequent fruit, generate and analyze antibody producing plants and, in collaboration with Jean VanderGehynst's lab at U.C.Davis and our industry partner Antibodies, Inc., will develop a scalable protein purification system, analyze the economic feasibility of large-scale production with this system and compare it with other plant expression systems. If this system equals or out-performs other plant systems we envision utilizing it to produce a range of useful proteins in large amounts. Success here could have broad impacts on human health care, agriculture and industry where increased availability of tools, such as antibodies, could make highly effective approaches feasible that previously were prohibitively expensive.