

**EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:** High throughput and “systems” biology techniques using microarrays are increasingly the basis for development of new instruments or medical treatments following the rapid discovery of new genes sets with new functions. Rapidly growing industries such as pharmacogenomics and toxicogenomics, and specialties such as systems biology (critical to modern biology, medical innovations & biowarfare preparedness) depend on new advances in microarray robotics. It is important that the nation’s universities rapidly prepare a new workforce in these crest-of-the-wave techniques. The combined CSU biology departments currently train >10,000 undergraduates and 1,000 graduate students. This multi-campus project would unite biology, chemistry, engineering students and industry personnel in providing a regional facility for use in both basic and applied research simultaneously. On site construction of the facility, with ongoing research with industry to improve or extend the new technology, would enable several regional CSU campuses (within easy driving access) to add new protocols to existing biotechnology labs to train their students in the new techniques. B.S. and M.S. graduates trained in these techniques will be in high demand by a range of California biotechnology-based industries. California needs this trained workforce for its future economic development and continuing competitiveness. CSU cannot afford to delay its contribution to this important area of workforce development. The synergy between several campuses using a microarray spotter and reader for research and education, and the presence of an ongoing Robotics Center, and a proposed Bioengineering Center will attract the attention and support of regional biotech companies. Distanced-Learning multimedia modules will help spread the new knowledge across the CSU. The PI has ten years experience and past NSF funding of \$600,000 for production of such modules.