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.

This project will develop a novel method to greatly extend the utility of the highly successful biosensor motif pioneered by Biacore-Pharmacia known as surface plasmon resonance-biomolecular interaction analysis (SPR-BIA). The new approach will extend the existing technology in two interrelated ways. Firstly, the gold film sensor surfaces of SPR-BIA will be replaced with arrays of nanoscopic gold particles that will optimize the sensitivity of the method as guided by the principles of optical physics. Secondly, the new sensors will operate using infrared light rather than visible light. This latter innovation allows the sensor to operate with an additional dimension of information – the vibrational spectrum of the molecules being detected. The information in the infrared spectrum will allow the biosensor to discriminate between the intended analyte target and interfering chemicals and provide some information about the chemical state of the molecule that was captured.

Such a sensor motif will have an important impact in the biotechnology sector by enabling more robust and informative assays measurements of drug-receptor interactions and genetic testing. These measurements are of fundamental importance to biotechnology and hence to the California economy.