

**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. Identifying a human being solely on the basis of markers present in his or her DNA has become possible only within the past five years. Before that time, the level of discrimination of DNA testing was too low to match a DNA sample with its source, and many crimes went unsolved or resulted in convictions that later proved to be erroneous. In 1999, in response to the dramatic improvement in DNA typing technology, California State Attorney General Bill Lockyear pledged to eliminate the backlog of over 10,000 unanalyzed convicted felon blood samples, opening the way for the creation of a large criminal DNA databank that could be searched for matches against DNA evidence from unsolved serious crimes. Simultaneously, evidence from old crime scene investigations began to be reanalyzed using the new technology. While this has led to some dramatic results in which crimes that are decades old have finally been solved, much of this old evidence has been poorly preserved and is either too limited or degraded to provide a profile using the currently validated human identification testing protocol. This project seeks to explore and validate reduced volume polymerase chain reaction (rv-PCR) as a means for obtaining DNA profiles from extremely limited or degraded samples. Successful completion of this aim will allow the Sacramento County Laboratory of Forensic Services to generate profiles from poorly preserved evidence, will almost certainly lead to the resolution of many additional unsolved cases in California, and will provide a validation model for rv-PCR that can be followed by other criminalistics laboratories in California and beyond.