EXECUTIVE SUMMARY [NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:
Millions of biological samples, including cells, viruses, and DNA/RNA, are stored every year for diagnostics, research and forensics. PCR has permitted the analysis of minute samples. Bones and teeth are relatively resistant to destruction as compared to soft tissues, and therefore may provide good samples for DNA following large-scale mass disasters, terrorist acts involving high heat exposure or remains exposed to the elements. These samples usually yield only low quality and low quantity DNA. Furthermore, other types of crime scene samples also yield low amounts of DNA such as sexual assault and touch evidence such as fingerprints. Efficient storage of the DNA is needed to ensure the stability of the sample over time for re-testing. Re-testing the sample may lead to saving lives by leading to the exoneration of the innocent or the identification of the criminal. The long-term objective for this study is to develop an efficient, long-term storage strategy for DNA laboratories. The current study is focused specifically on forensic DNA samples, however this technology is applicable to all DNA laboratories including bacterial, fungal, viral, animal, plant and human clinical and epidemiological laboratories. The ability to store DNA samples at room temperature versus conventional freezing, would provide the ability to save significant cost to all DNA laboratories in California, the entire US and abroad. Eliminating or reducing freezer storage of the millions of DNA samples stored every year in freezers would also contribute to reducing the emission of greenhouse gasses implicated in global warming. This technology can also be applied to more than DNA storage as proteins and cells are also stabilized.