



A66 Utility of “PrimeStore” in the Long Term Storage of DNA for Forensic DNA Analysis

*Sulekha Coticone, PhD**, and *Dawn Gant, BS, Florida Gulf Coast University, 10501 Florida Gulf Coast University Boulevard, Fort Myers, FL 339652; Dennis J. Reeder, PhD, Reeder Analytical Consulting, 7094 Glen Abbey Court, Frisco, TX 75034; and Luke T. Daum, PhD, Longhorn Diagnostics, 1747 Citadel Plaza, Suite 206, San Antonio, TX 78209*

After attending this presentation, attendees will have learned about the factors affecting long-term storage of DNA.

The presentation will impact the forensic science community by investigating the issues affecting long-term storage of DNA.

Forensic evidence must be maintained for many years as the backlog in casework samples is eliminated. The cost to retain evidence in freezer space can be significant, but if effective preservatives could be added to the biological evidence for room temperature storage, storage cost could be reduced. To encourage suitable preservation and storage of forensic evidence, the National Institute of Justice (NIJ) recommends determining cost effective methods for storage of evidence. This study researches the utility of PrimeStore in comparison with organic osmolytes on the long-term storage of DNA from biological samples as well as in improving the downstream analysis of STRs (short tandem repeats) in forensic samples. Prime store is presently being used to preserve viral nucleic acids and other biological samples. Preliminary data shows that DNA incubated with PrimeStore using an optimization assay can be amplified using STR primers without inhibition. We have previously shown that osmolytes (trehalose and sorbitol) can be used to stabilize blood samples. To assess the ability of PrimeStore to improve the storage of biological samples in comparison with organic osmolytes, PrimeStore is incubated with DNA samples extracted from biological samples for various time periods and held at extreme environmental conditions (e.g., high temperature and humidity). DNA from these samples, as well as those incubated with organic osmolytes, is then analyzed by STR analysis. The goal is to determine if PrimeStore can protect DNA from oxidative damage using a novel assay involving an aldehyde reactive probe. These studies will provide data for the effectiveness of PrimeStore in protecting DNA from damage due to environmental factors over extended periods of time in comparison with organic osmolytes.

DNA, Storage, Degradation