AMPLIFICATION STABLES: WHERE WORKFLOW CAN GAIN HORSEPOWER USING A STABILIZING MATRIX

Denise Anderson, Craig Nolde, Dan Hellwig, Robert Sheen, Ryan Buchanan, Kim Concepcion, Sorenson Forensics

Long term storage of samples for many police agencies and forensic laboratories is a challenge. Freezer storage can be expensive and many room temperature storage methods risk degradation or a loss in DNA yield when any attempt to re-process these samples is required. The use of a product, such as Biomatrica's DNA Stable® LD utilizes a stabilizing matrix that maintains the integrity of the extracted sample, and mitigates these drawbacks. Unfortunately, in the standard use of introducing DNA Stable® LD matrix to samples at the end of a process can become time consuming. Sorenson Forensics has evaluated integrating DNA Stable® LD earlier in the DNA process, before normalization/amplification, and then incorporating a dry down step with Sorenson Forensics' automated solution on a Hamilton STARlet system which will eliminate the need for additional purification.

This workflow automates the transfer of DNA Stable® LD and allows for extracts to remain in the "stables" awaiting their setup for the STR sprint in downstream processing. There are new challenges to overcome, but the benefits to such a process workflow could benefit the laboratory by removing the manual concentration steps that result in reduced labor, consumable costs and freezer space along with benefits to other stakeholders if any future re-testing is necessary. A series of proof of concept studies was performed to assess this workflow followed by a full validation/material modification that is designed around how the DNA Stable® LD matrix system could affect downstream performance of forensic samples. Results in the studies required adjustments to when the stabilizer was introduced. Following the validation, implementation challenges were also addressed and include staff training, LIMS programming and Hamilton liquid class development in order to transfer the matrix accurately. This unique long term storage workflow can ensure that these "thoroughbred" samples are not put out to pasture after their initial evaluation.