G124 Investigating the Order of the Dual Examination of Touch Prints Via Fingerprint and DNA Analyses

Kevin G. Smolar, MS, 1950 N Talbott Street, Apt 4, Indianapolis, IN 46202; Christine J. Picard, PhD, 723 W Michigan Street, SL 306, Indianapolis, IN 46202; and Allyson E. Dagnon, BS, Indiana State Police Laboratory, 550 W 16th Street, Ste C, Indianapolis, IN 46202*

After attending this presentation, attendees will gain an understanding of the effects that a dual examination of a single piece of evidence for latent prints and DNA have on one another.

This presentation will impact the forensic science community by providing information on the effects of collecting latent prints and DNA from a single piece of evidence.

Latent print development for investigational leads has been established in the criminal justice community for a long time. However, with recent advancements in DNA profiling, obtaining DNA samples from latent prints has become a reality. These two processes together can provide valuable information to a forensic investigation. However, determining the order in which the analyses are done has not been thoroughly investigated. A comparison of samples analyzed first for DNA and second for fingerprints versus an analyses conducted in the opposite order can provide insights into which technique should be given priority when examining latent prints.

A standardized sample of 100 fingerprints and low-template DNA from a single individual was prepared by pipetting 20uL of saliva onto the designated fingerprint area on plain, white computer paper. Once dry, a right thumbprint was made by using an amino acid-based latent print reference pad. Half of these fingerprints were subjected to DNA extraction first, followed by latent print processing. The other half were processed for prints and then swabbed for DNA using the double-swab method. A Millipore® Amicon extraction protocol was used to extract the DNA and this DNA quantified using the Quantifiler® kit. The fingerprint samples were then analyzed by a fingerprint analyst at the Indiana State Police to determine their usability in an investigation. The analyst used both 1,8-Diazafluoren-9-one (DFO) and ninhydrin in the examination which is standard protocol for fingerprint analysis at the Indiana State Police. The resulting prints were then evaluated to determine the quality of the sample.

The average quantity of DNA when DNA was first extracted was 1.126 ± 0.789ng/uL and 0.932 ± 0.866ng/uL when the DNA was extracted following latent print processing. The fingerprint analyst determined that of the 50 samples examined, nearly half of them were suitable for use in fingerprint examination. For the remaining 50 fingerprints, all 50 were considered usable for fingerprint analysis.

The results obtained from this investigation can be integral in increasing the efficiency of overall use of latent prints. By determining the best order for completing a dual exam, forensic scientists can effectively acquire results related both to fingerprint and DNA analysis. The results listed above indicate that the amount of DNA collected during each of these trials did not differ significantly. With the information obtained in this research, the forensic science community can more effectively collect information related to latent prints and DNA from a single piece of evidence.

Latent Prints, DNA Extraction, DNA Quantitation

 ** Presenting Author*