

EXTRACTING AMPLIFIABLE DNA FROM GLOVES

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An amazing array of evidentiary samples are submitted to the Detroit Police Forensic Services Division for crimes such as armed robberies, hit and run accidents, homicides and sexual assaults. An alarming number of these cases go unsolved due to a dearth of the evidence available to determine if a suspect was involved in the crime. Frequently the perpetrator was able to cover his or her tracks. In order to prevent the transmission of evidence according to Locards' Exchange Theory, a criminal may wear gloves so as not to leave fingerprints behind. However with new DNA technology, some of these criminals aren't escaping so cleanly.

I initiated a study to determine which area of a glove will provide the best possible DNA sample in order to determine who may have worn it. Several gloves were submitted to me ranging from typical latex medical gloves to gardening and work gloves. Samples from the glove were removed from defined areas and the DNA was extracted, quantified, amplified for the PowerPlex™ 1.1 loci, analysed via PAGE and scanned using a Hitachi FMBIO® laser scanner with StarCall software. The gloves were separated into two groups. The first group of gloves were used for certain tasks and for a length of time in which outside factors could affect the DNA available on the gloves. The other group consisted of several pairs of gloves worn by the same individual at noted intervals of time. The effects of hand washing and glove washing were noted as well.

The preliminary findings suggest that samples removed from the fingers and thumb areas are a better source of DNA than those from other areas on the glove. Other findings demonstrate that the majority of the time (with the gloves tested) no STR profiles were obtained from a single amplification. If samples were subjected to the "double amp" procedure (see poster # 14 Greenspoon and Turek this meeting), full PowerPlex™ 1.1 profiles were often obtained.

