

DEGRADABILITY OF BOTH A PHYSICAL LATENT FINGERPRINT AND ITS ASSOCIATED EXTRACTED DNA

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There are several ways to identify a potential suspect in a crime which can range from an eye witness statement to something as small as a single drop of blood. Just as a fingerprint can be used in identification, DNA can also be used to distinguish individuals based on the significance of their profiles. In instances where DNA is insufficient in quantity for accurate testing or has potential for contamination, latent fingerprints may be used as a source for DNA. This could be most helpful in cases where no blood or other bodily fluids are left at the crime scene, but rather a simple latent fingerprint. Because DNA degrades in the presence of some environmental factors, such as heat, it may be beneficial to know if there is a relationship between the quality of a fingerprint and its possible source for obtaining a usable DNA profile.

The purpose of this study is to see whether or not physical changes occur in a latent fingerprint when exposed to heat over different lengths of time, while monitoring the degradation of its extracted DNA to see if there exists a relationship between the two.

A set number of latent fingerprints are collected from glass and subjected to varying temperatures and increased lengths of time intervals. DNA will be harvested from dusted fingerprints using the chelex 100 method. Real-time PCR will be used to quantify DNA and its quality to be checked by multiplex PCR of all 13 STR's. Finally, amplified products to be analyzed by capillary electrophoresis on ABI genetic analyzer 3130.

It is suspected that as the length of time and temperature are increased, noticeable changes in the physical appearance of the latent fingerprint will occur as well as an increase in the degradation of its DNA collected. Having knowledge of the dual purpose of a fingerprint, not only as a processed fingerprint for identification but also as a source of DNA as well, law officials could greatly improve the proficiency and effectiveness of that evidence at the time of collection.