CASEWORK EXPERIENCE IN DNA ANALYSIS OF MATERIAL ISOLATED FROM CLOTHES, JEWELRY, CELLULAR PHONES, AND FINGERPINTS

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Increased sensitivity first by the PCR technique and secondly by sequencing of mitochondrial DNA has made it possible to analyze a wide variety of different biological evidence materials. The requests for mtDNA analysis have increased notably during the past years. We have analyzed these cases by sequencing the hypervariable regions HVI and HVII. Many cases have involved series of armed robberies where the evidence materials have been skin debris on spectacles, clothes, shoes, gloves, cellular phones, and handguns left at the scene of the crime. A number of murder cases where the evidence consisted of watches, stains in a bathtub, stains in an oven, and a small piece of steel wool have also been analyzed. A few casework examples will be shown and the analysis of skin debris on different items and overall success rates will be discussed.

Even the DNA found in a single fingerprint can be analyzed with this sensitive technique. An evaluation study of the influence on the analysis by the different powders and dyes that are used to detect fingerprints has been done. A number of fingerprints on paper have been analyzed in cases with threatening letters. Casework results will be shown. Analysis procedure, the evaluation study, and overall success rate will be discussed.

Although the discrimination power in mtDNA sequencing is far from the one obtained when analyzing multiplex nuclear markers, it is a very useful system for samples containing DNA amounts too small to perform nuclear DNA analysis. Our results have been in combination with other circumstantial evidence in court. Thus, there are a rich number of evidence materials different from the traditionally analyzed materials such as stains and hairs found at a crime scene that can be used in a criminal investigation.