

## **SYSTEMATIC ANALYSIS OF CONTACT TRACE DISTRIBUTION AT CRIME SCENES, COLLECTION METHODS AND DNA ANALYSIS RESULTS BASED ON REAL CASEWORK DATA**

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In the present day, the biggest group of crime samples analyzed in forensic genetic laboratories are those deposited onto surfaces by touch, such as fingerprints or touch mark remains. Contact traces are composed of fragmentary cells/nuclei, nucleated epithelial cells from hands, anucleate corneocytes, transferred nucleated cells, and cell-free DNA contained in sweat-fat substance. Because of a lack of specific detection methods, correct prediction of contact traces' deposition area at the crime scene and selection of proper collecting methods are the most important factors which can influence the results of genetic analysis.

The most popular methods of collecting these types of traces are swabbing, performed frequently by cotton and flocked nylon swabs, and tape-lifting with the use of numerous types of tape characterized by different adhesive strength and glue components.

The aim of our work was to collect data concerning about 2000 contact traces analysed in three different forensic laboratories. The type of crime, the specific location of the trace at the crime scene as well as the type of surface and time since deposition were ascertained. The effectiveness of the most common touch DNA trace collection methods, encompassing swabbing and tape-lifting was compared.

The obtained results confirm the dependence between touch trace collection method and the characteristics of the surface on which it is deposited. The absorptivity, structure and size of the surface should be taken into account when considering a low-DNA trace collection method.