

## **DNA ISOLATION FROM BLOOD AND BUCCAL SAMPLES ON FTA<sup>®</sup> FOR HUMAN IDENTIFICATION.**

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The FTA<sup>®</sup> family of matrices is well established in the field of collection and long term room temperature storage of a wide range of biological sample types. The chemically impregnated matrices serve to safeguard the sample from DNA damaging elements effectively providing the user with a source of high quality nucleic acid for downstream amplification reactions. FTA is widely used in forensic labs for STR analysis, but while the standard process follows a “paper-in” reaction, many of the methods for DNA analysis in the forensic lab require that the DNA be eluted for liquid handling processes. The present study evaluated commonly used forensic protocols for extracting DNA from FTA matrices with a focus on Human Identification.

We have established a set of recommendations for isolating DNA from the FTA matrix in liquid form ready for STR amplification. The list of DNA extraction methods includes organic extraction, Chelex purification, Qiagen QiaAmp, Illustra genomic DNA extraction kit, and the Promega DNA IQ kit. DNA from 1.2, 2, 3 and 6 mm diameter FTA punches was examined in two formats (microcards, and EasiCollect™) using two types of biological samples (blood and buccal respectively) from 10 individuals. DNA yields extracted from these matrices exhibited a trend of increasing yield from increased disc size with yields of over 400ng of DNA from the largest disc size of 6mm as determined via Real Time PCR on ABI's 7900HT. The data shows a consistently higher DNA yield from buccal cells collected with the EasiCollect device over the traditional lollipop swab method using any of the five extraction techniques. Extracted DNA was tested for STR profile accuracy and reproducibility among same samples using the Promega Powerplex 16 kit as analyzed on the ABI Prism 310 genetic analyzer. The results from STR analysis show positive identification of extracted samples using all DNA extraction methods tested.