

**PowerPlex® Y-STR analysis on forensic casework samples:
FTA®-card as a matrix for blood samples from fresh and
decomposed bodies.**

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Forensic casework may involve DNA-profiling of decomposed bodies. The purpose of this study was to investigate the potential of FTA®-card as a matrix medium for blood samples obtained from decomposed cadavers and analyzed with the PowerPlex® Y System. Twenty medico legal autopsy cases with advanced putrefaction changes and ten with no visible signs of decomposition were collected in our department and DNA was extracted from FTA®-cards. We have examined the PowerPlex® Y System which allows co-amplification of 12 Y-STR loci: DYS 19, DYS 385 a/b, DYS 389 I/II, DYS 390, DYS 391, DYS 392, DYS 393, DYS 437, DYS 438, DYS 439. Our results show that full profiles can be observed with as little as 125 pg male DNA, analyzed on ABI Prism® 310 and 3100 Genetic Analyzers. In addition, none of the FTA-samples obtained from five female cadavers and amplified by using the PowerPlex Y System exhibited amplified products at all 12 Y-STR loci. Studies were carried out using variations in micro-punch size to determine the best size/volume ratio for amplification. As an additional procedure QIAquick® (Qiagen, Inc.) purification system was used. The quality of results was assessed by considering a number of factors – condition of baseline, presence of non-specific bands, stutter-bands etc. In conclusion, FTA®-card as an extraction medium in combination with PowerPlex® Y amplification system is suitable in forensic casework dealing with blood samples from fresh and decomposed cadavers.