UNIVERSITY OF AMSTERDAM





FORENSIC LITERATURE THESIS

LITERATURE THESIS

Title	: Sampling strategies and methods for DNA recovery
Keywords	: DNA recovery; sampling methods; trace recovery
Forensic Expertise Area	: Trace recovery; DNA
Department	: n/a
Institute/Company	: The Maastricht Forensic Institute
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SHORT DESCRIPTION

There is a substantial body of literature on sampling methods and success rates for DNA recovery from different substrates using different sampling devises. The substrate that is targeted, and the sampling strategy will determine the optimal sampling devise to be used. Although this step in the forensic process is crucial to the outcome of forensic DNA analyses, there is currently no overview of available methods and their success. The purpose of this literature review is therefore to determine methods available for sampling, the sampling strategy (application and type of fluid for moisturizing a swab, application of the devise to the substrate, double swab or single swab, etc.), strategy for treatment of samples before DNA-profiling (i.e. pooling of samples) and their respective success in collecting and releasing DNA (during DNA extraction).

Since this is a very broad topic, it is scoped into three literature thesis topics:

1. Sampling strategies and methods to collect non-self DNA from human bodies (including internal intimate swabs)
2. Sampling strategies and methods to collect DNA from clothing and other porous surfaces
3. Sampling strategies and methods to collect DNA from non-porous surfaces

At the moment there is no current review article that combines all insights for all different substrates and sampling methods. The aim is to convert the literature thesis into a review article.

REFERENCES

1) de Bruin, K. G., Verheij, S. M., Veenhoven, M., & Sijen, T. (2012). Comparison of stubbing and the double swab method for collecting offender epithelial material from a victim's skin. Forensic science international: Genetics, 6(2), 219-223.

2) Hess, S., & Haas, C. (2017). Recovery of trace DNA on clothing: a comparison of mini-tape lifting and three other forensic evidence collection techniques. Journal of forensic sciences, 62(1), 187-191.

3) Verdon, T. J., Mitchell, R. J., & van Oorschot, R. A. (2014). Swabs as DNA collection devices for sampling different biological materials from different substrates. Journal of forensic sciences, 59(4), 1080-1089.

REQUIRED/RECOMMENDED EXPERTISE

- Understanding of factors influencing DNA recovery (including DNA typing methodologies)
- Understanding of the practical implications of sampling methods in trace recovery
- Skill in critically reviewing scientific literature and report writing