UNIVERSITY OF AMSTERDAM





FORENSIC LITERATURE THESIS

LITERATURE THESIS

Title	: ***Sampling latent DNA-traces, in the presence of blood or other body fluids***
Keywords	: *Blood, biological traces, DNA-sampling, visualisation, separation*
Forensic Expertise Area	: *DNA*
Department	: Human biological traces
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SHORT DESCRIPTION

When sampling for latent DNA-traces it's desirable to only sample those. But unfortunately they are often on a trace of evidence in presence of other body fluids. For example on a bloody surface, often blood is sampled with the latent biological contact trace. The result of this is that the main contributor in the DNA-profile is from the person who donated the blood, and the person who donated the latent biological contact traces is overshadowed. This could also happen with other body fluids, e.g. sperm or saliva.

In this literature thesis you first need to discover what latent DNA-traces consist of (cell free DNA, cellular components etc.). Then you can see if it's possible to visualise this traces in certain ways, or visualise the other body fluids. Is there an effective method to sample those traces specific? Or is there a good method to separate the body fluids and latent DNA traces afterwards (e.g. Amido black method or microdissection)*?

Look for different methods to separate different body fluids and latent biological traces and compare them in different stages in the process; with the DNA-sampling or at the DNA-isolation. Is there already a good, valid method for this or are there some good options to develop a method?

** Don't focus on separating sperm cells at the DNA-isolation step, for this there are already some good methods known and used. Put your focus on separating e.g. blood, saliva or urine.*

REFERENCES

1) Malegori, C., Alladio, E., Oliveri, P., Manis, C., Vincenti, M., Garofano, P., Barni, F., & Berti, A. (2020). Identification of invisible biological traces in forensic evidences by hyperspectral NIR imaging combined with chemometrics. Talanta, 215, 120911

2) Andersson, R. (2017). An evaluation of two presumptive blood tests and three methods to visualise blood. DIVA

3) Kanokwongnuwut, P., Kirkbride, K. P., & Linacre, A. (2018). Detection of latent DNA. Forensic Science International-genetics, 37, 95–101

REQUIRED/RECOMMENDED EXPERTISE

- DNA laboratory
- Curiosity
- Detective work