

Commentary on: Wickenheiser RA. Trace DNA: a review, discussion of theory and application of the transfer of trace quantities of DNA through skin contact. *J Forensic Sci* 2002;47(3): 442–50.

Sir:

We note that Mr. Ray Wickenheiser's review of trace DNA briefly discusses the potential of fingerprints to transport DNA from the donor's skin onto touched surfaces.

In the course of routine casework, we have been asked if it may be possible to obtain DNA profiles from fingerprints or hand prints that have been developed with fingerprint powder. DNA testing has been requested in these instances because the print lacks detail or is smudged, and therefore, cannot be used for a fingerprint comparison.

When considering this type of testing, the potential of contamination from the fingerprint powder must be considered. It appears to be general practice to dip the fingerprint brush back into the same container each time the brush is recharged with powder. In some instances, fingerprinting will be done close to, or over, bloodstains. The container may be taken to several crime scenes before being re-filled.

It is, therefore, theoretically possible for DNA to be picked up from a surface by a fingerprint brush, deposited in the container of fingerprint powder, and then re-deposited on another print that is subsequently dusted. If DNA testing is then carried out on the developed print, this contaminant DNA may be detected.

In work carried out in our laboratory (Sutherland, Cordiner, Bright and Walsh, 2000 unpublished), we created palm, lip/nose, tongue, ear and bare foot impressions. These impressions were then developed with fingerprint powder from crime scene kits currently used by Scene of Crime Officers. Swabs were taken from these prints for subsequent DNA analysis.

DNA extraction of the samples using standard methods for trace DNA analysis (1) was followed by PCR amplification in both the Promega Geneprint CTT (2) and AMPF ℓ STR[®]SGM Plus[™] (3,4) multiplexes.

The results of this testing showed that partial DNA profiles matching the donor of the print were obtained in 3 of 11 impressions. No unknown DNA profiles were obtained.

However, we also took samples from fingerprint brushes and fingerprint powder, from kits used by the Scene of Crime Officers. A full, unknown DNA profile was obtained from one of the brushes, in both the CTT and SGM plus multiplexes.

Our results have shown that it is possible to obtain DNA profiles from prints that have been enhanced with fingerprint powder. The results suggest that trace DNA analysis of this type can provide valuable forensic evidence. However, in assessing whether or not to sample developed fingerprints for trace DNA, the potential for secondary transfer of DNA in the fingerprinting process should be considered. We hope to publish our work in the near future.

References

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