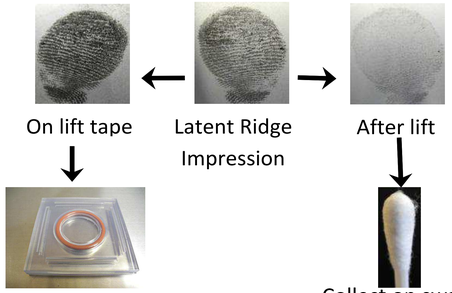
A New SOP: DNA-STR Profiles from Individual Fingerprints on Sticky Tape

Alexander Sinelnikov (alex@ifi-test.com) and *Karl A. Reich* (karl@ifi-test.com)
Independent Forensics, 500 Waters Edge, Suite 210, Lombard, IL 60148, USA

Workflow Overview



On lift tape — Latent Ridge Impression — After lift

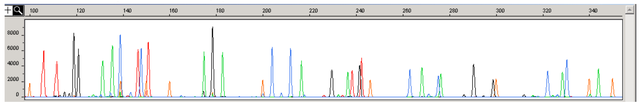
Place in Lysis Chamber

Collect on swab

Extract DNA in Lysis Chamber
Collect with swab
Complete lysis/digestion

Purify DNA from combined lysates
Subtractive Xs spin column

PCR Amplification, post-PCR purification and concentration



SOP Summary

1. Identify individual fingerprint on surface of questioned item using fingerprint powder;

2. Lift the identified ridge details on a sticky tape/hinge card and collect the 'leftover' of the fingerprint using a sterile cotton swab wet with 10 µL collection buffer (retain cotton swab for further processing – step 4);

3. After ridge impression details transferred to tape/hinge card are photographed, immobilize sticky tape in the sticky tape lysis chamber so that the fingerprint on the adhesive side of the tape is exposed; cover tape with adhesive taming material;

4.Add 120 µL lysis buffer to tamed tape, close chamber and incubate 1 hr at 56°C; collect lysate with the retained swab (step 2);

5. Using spin-basket technique, collect all of the biological material from the swab by centrifugation;

6. Incubate recovered material at 56°C for 1 hr to complete digestion of all material;

7. Purify total lysate on OneTouch Xs DNA purification column (subtractive DNA purification);

8. Assess concentration of DNA in the purified lysate and, if necessary, concentrate 3-fold in a vacuum concentrator;

9. Perform multiplex DNA-STR PCR of your choice; if necessary, increase RFU signal by post-PCR cleanup and concentration (AmpliconRx™).

Representative Data

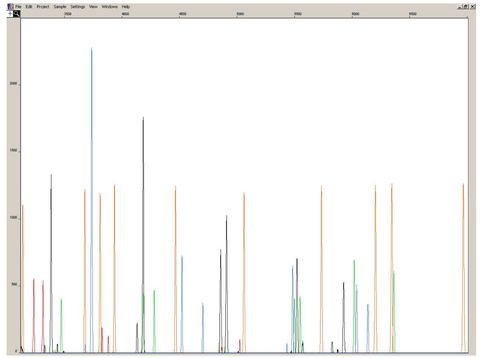
Fingerprint #1 — Fingerprint #2

A — A1 — B — B1

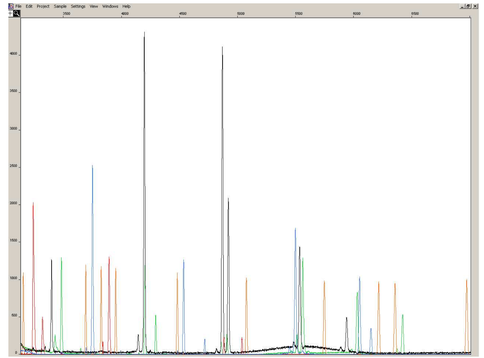
Latent ridge impressions from two fingerprints were identified with fingerprint powder (A and B) and individually transferred to two separate pieces of the lift tape (A1 and B1)

A2 — B2

Each fingerprint was processed separately. Figures A2 and B2 show collection swab in a spin basket, DNA purification column, and final purified lysate .



Lysate from fingerprint #1 was concentrated 3-fold and used in a 25 µL PCR (Identifiler) reaction. A full DNA profile (15 STR loci and Amelogenin) of the individual who left the latent fingerprint was obtained



Lysate from fingerprint #2 was concentrated 3-fold and used in a 25 µL PCR (Identifiler) reaction. After post-PCR purification (Amplicon Rx), a full DNA profile (15 STR loci and Amelogenin) of the individual who left the latent fingerprint was obtained