

Continuing needs (and pressure) from law enforcement and security concerns has pushed forensics to process smaller and smaller items of evidence – e.g., touch DNA and single fingerprints.

Advances in materials and methods for fingerprint collection, DNA extraction / purification and post-PCR processing have improved such that it is now possible to use a latent print for both comparison and developing a DNA profile. Developed latent prints that are not of suitable quality for comparison (smudges, etc.,) can still be successfully processed for DNA profiling.

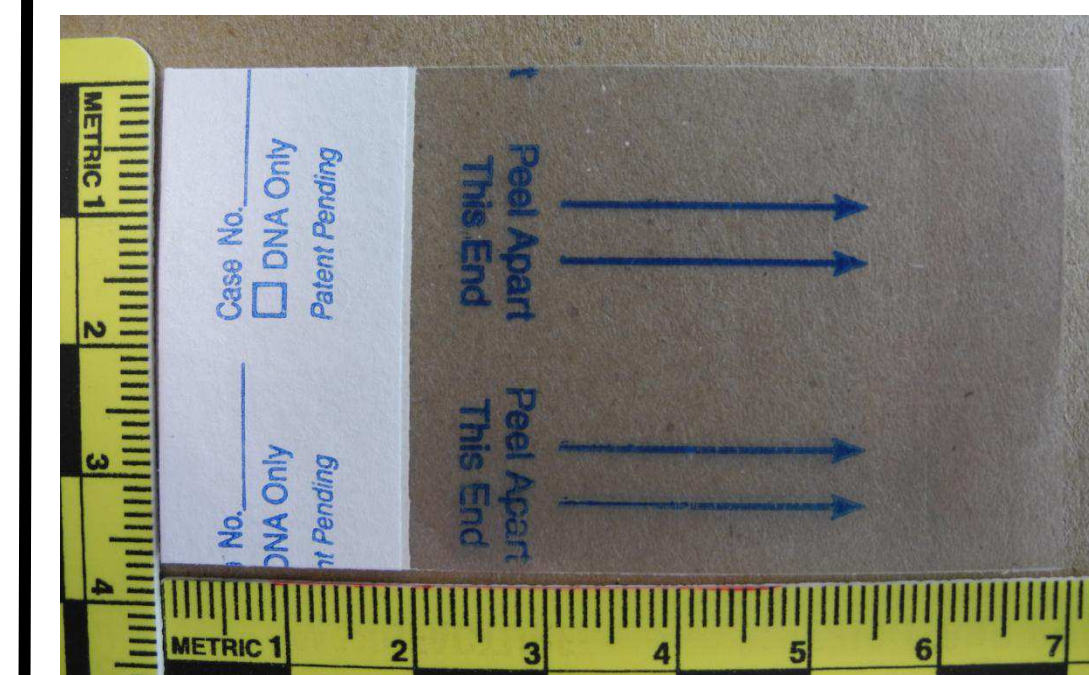
Summary of fingerprint collection procedure

1. Identify individual latent on a surface of questioned item using DNA-free fingerprint powder and lift the ridge impression details on “Fingerprint & DNA” lift card;
2. Collect the ‘leftover’ of the enhanced latent from the surface using a cotton swab moistened with 10 µL of collection buffer; reserve the swab for processing by the DNA laboratory;
3. Image the enhanced and lifted latent on the “Fingerprint & DNA” lift card and then transport the card and the reserved swab to the DNA laboratory for processing.

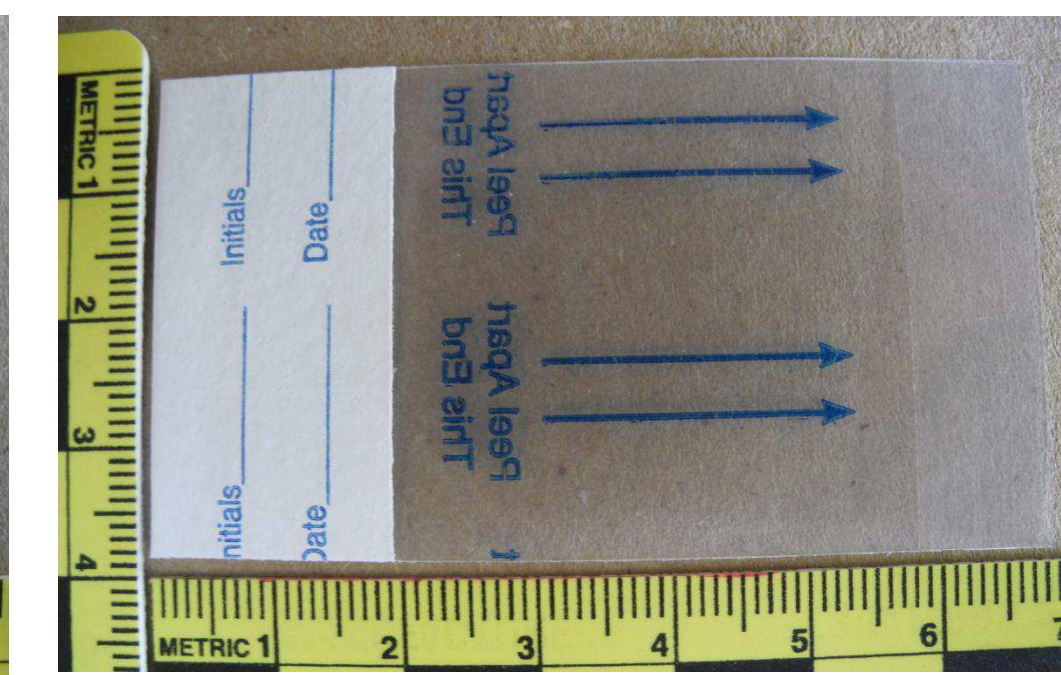
Summary of DNA laboratory process

1. Open “Fingerprint & DNA” lift card and extract DNA from the biological material trapped on the sticky surface of the lift card;
2. The reserved swab (see step 2 above) is then used to collect the DNA extract from the adhesive surface of the “Fingerprint & DNA” lift card and the total extract collected via spin basket;
3. The extracted DNA (from both the swab and lift card) is purified by subtraction (Xs DNA purification column, OneTouch kit).
4. After concentration and quantification, a DNA profile of the recovered DNA is obtained using standard forensic multiplex PCR kits and post-PCR cleanup and concentration (Amplicon Rx kit).

“Fingerprint & DNA” lift card



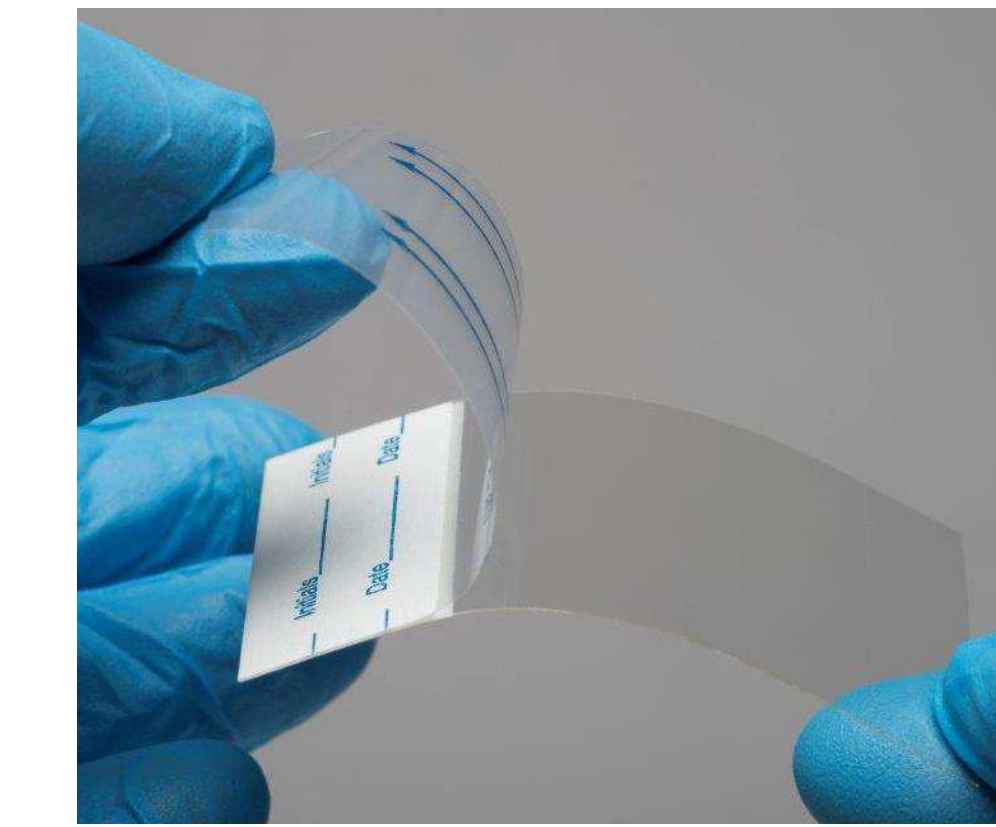
Lift card: front



Lift card: back

Dimensions of the lift card: 40 x 70 mm.

Lifting the liner and exposing adhesive surface of the card

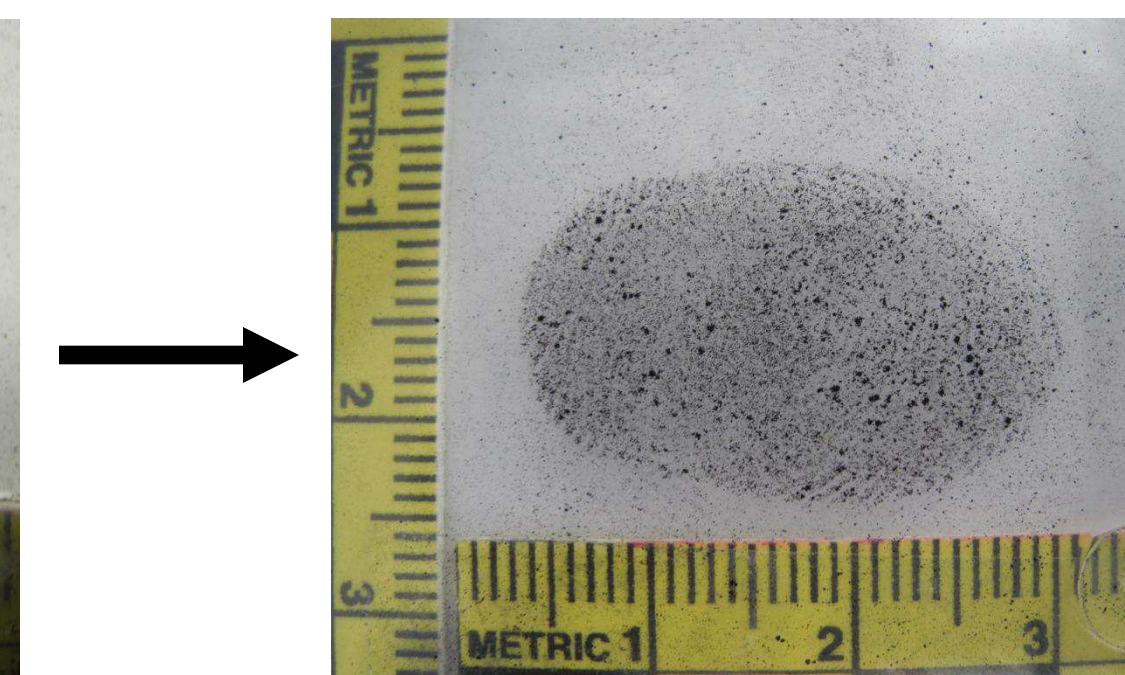


On the short side of the card there is 5 mm wide tab that allows easy separation of the liner and adhesive surface, and permits easy access to the biological material on the sticky surface of the card.

Collection of latent fingerprint biological material



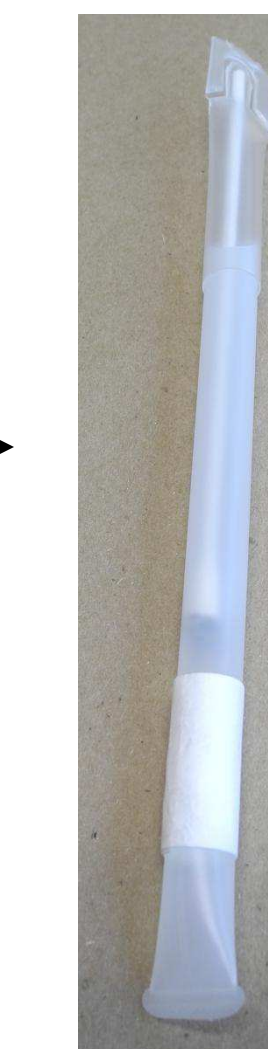
enhanced latent (starting material)



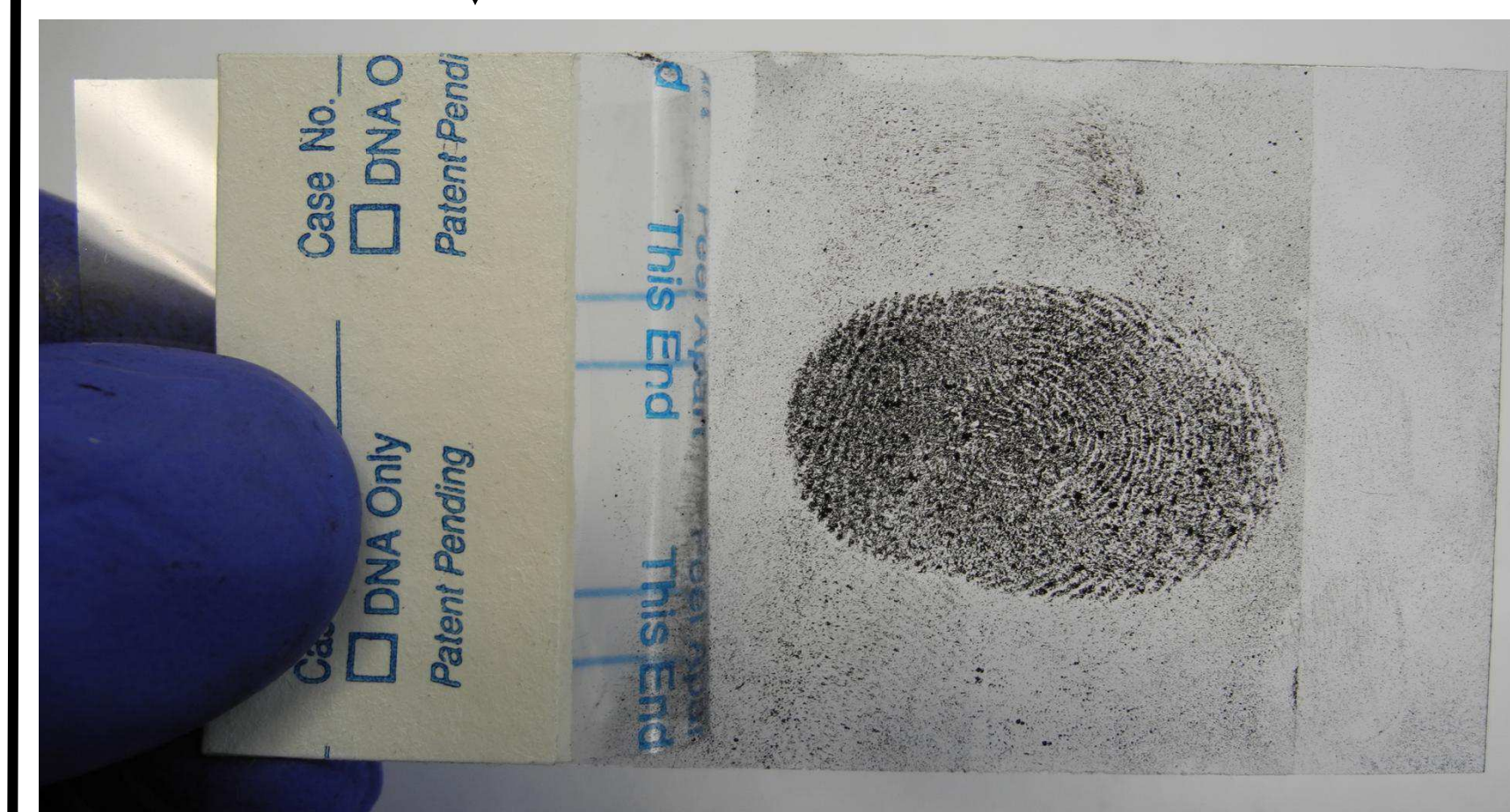
‘Unlifted’ biological material left behind on evidence.



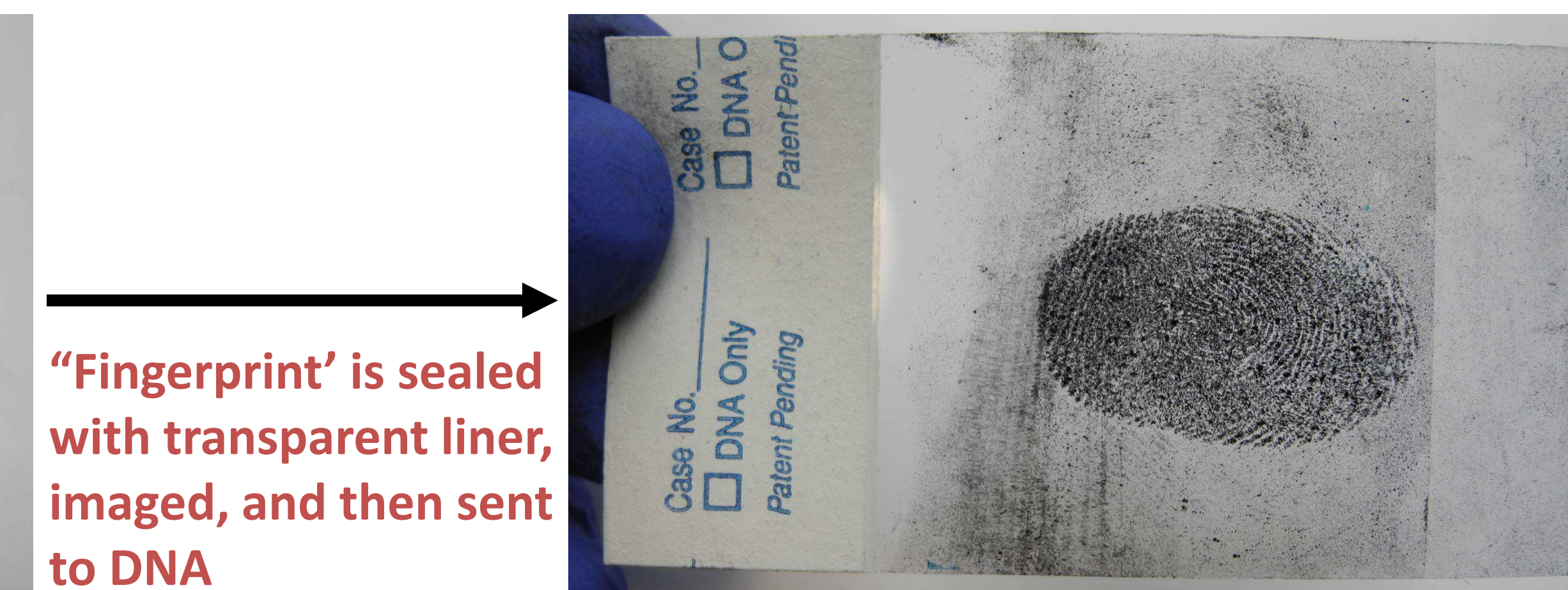
Collect leftover material using swab and OneTouch NDLB collection buffer.



Lift card and swab are both sent to DNA

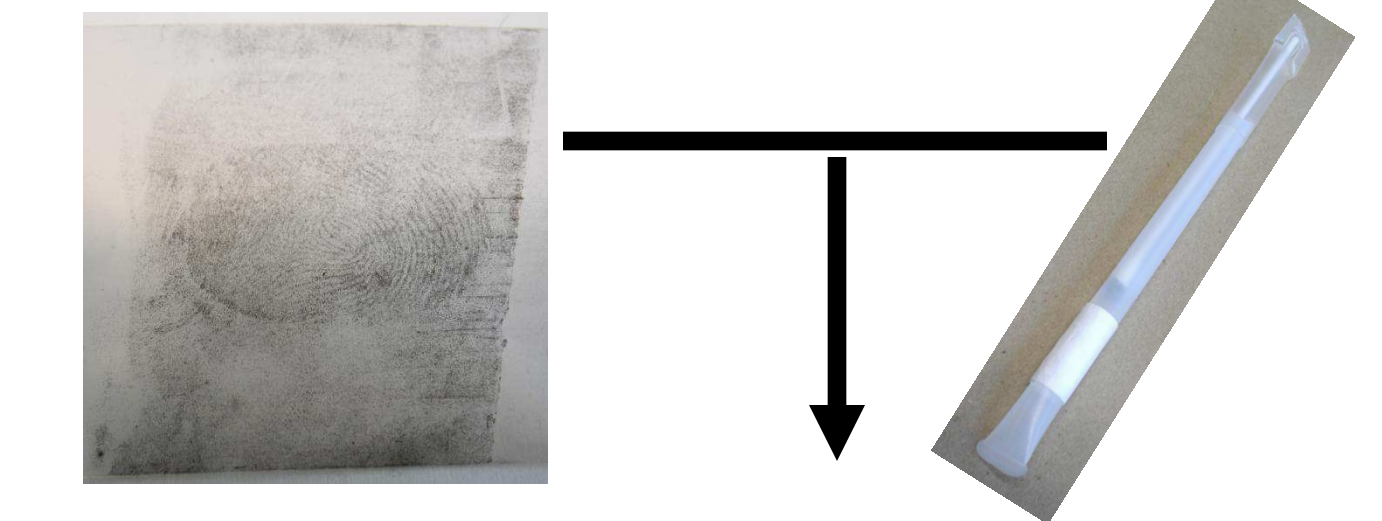


‘Fingerprint’ is lifted on the card (transparent liner is bent back to expose adhesive surface of the card).



“Fingerprint” is sealed with transparent liner, imaged, and then sent to DNA

DNA laboratory:

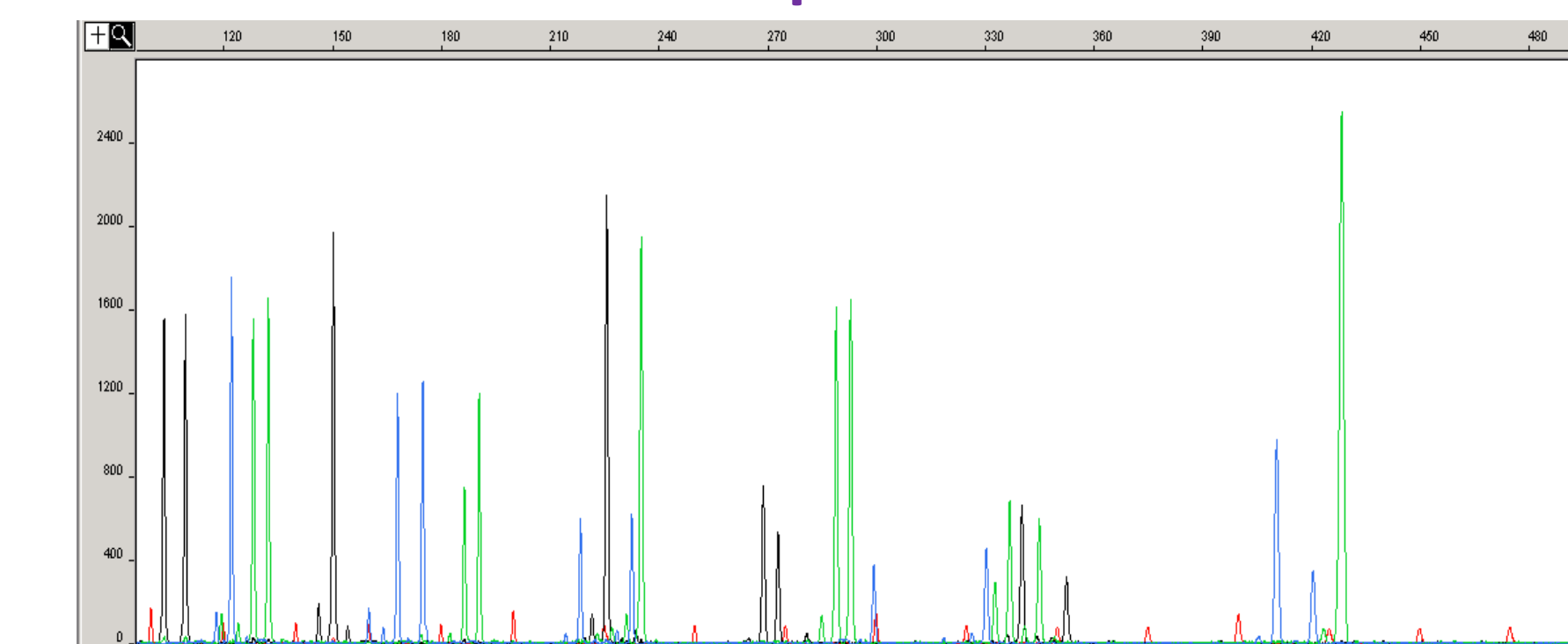


DNA is extracted from the card and the swab



Total DNA extract (from card + swab) purified on Xs column.

Purified DNA is amplified with forensic multiplex PCR kit



Latent comparison and DNA profile from the same latent evidence