

# A Forensic Validation Study on the Effectiveness of the Streck Philisa<sup>®</sup> High-Speed Thermocycler

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## **Abstract**

While DNA analysis can be extremely helpful, it is not a quick process. It can take more than 3 hours to complete the PCR amplification of forensic samples. Streck, a company that sells clinical laboratory products, has created the Streck Philisa<sup>®</sup> Thermocycler, which claims to be a high-speed thermocycler, and would complete PCR in about 30 minutes. The purpose of this project is to perform a validation study showing that the Streck Philisa<sup>®</sup> high-speed thermocycler provides the same quality results in less time than a regular thermocycler on forensically relevant samples. Various DNA sample types were collected. The DNA was extracted, quantified, amplified, separated, and analyzed using standard forensic DNA procedures and kits, with the exception of the thermocycler. Amplification was carried out using the Streck Philisa<sup>®</sup> high-speed thermocycler. Initial results showed that the instrument did in fact work, however results were not always optimal. Electropherograms of the analyzed DNA samples exhibited increased stutter peaks and PCR inhibition. These problems were especially evident in those samples with smaller quantities





**Figure 4a.** Electropherogram of DNA profile recovered from a buccal swab amplified with the Streck Philisa® high-speed thermocycler using a 25 µL amplification volume and PhilisaFAST™ DNA Polymerase. It can be seen that amplification was not successful and an incomplete profile was obtained.

**Figure 4b.** Electropherogram of DNA profile recovered from the same buccal swab pictured in Figure 4a. The sample was amplified with the Streck Philisa® high-speed thermocycler using a 15 µL amplification volume which included 1 µL of 2 µg/µL BSA solution and PhilisaFAST™ DNA Polymerase. It can be seen that the reduced volume and addition of BSA allowed for a complete profile.

Higher stutter peaks were another issue seen in the

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