

VALIDATION OF AMPF/STR COFILER™ FOR A FRENCH CANADIAN POPULATION USING A COST-EFFECTIVE APPROACH SUITABLE FOR SMALL FORENSIC SAMPLES

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Short tandem repeat (STR) loci are widely used in forensic laboratories for identification purposes. The Ampf/STR COfiler™ (Perkin-Elmer) kit consists of six polymorphic loci (D3S1358, D16S539, TH01, TPOX, CSF1PO and D7S820) plus amelogenin and is designed to complement the Profiler Plus™ kit with respect to CODIS requirements. Validation studies were carried out with specific emphasis on a reduced consumption of small crime scene DNA samples and reagents.

Repeated sizing of the allelic ladder was performed and within gel/between gel variation was shown to be minimal with standard deviations at or below 0.1 base. PCR reactions were set up with volumes ranging from 7.5 µl to 50 µl and DNA input from 100 pg to 3 ng in a Perkin-Elmer 9600 Thermal Cycler. Kit reagents were added proportionally. Electrophoresis was carried out on an ABI 377 DNA sequencer using GeneScan® ROX 500 as internal standard. Smaller reaction volumes resulted in greatly improved sensitivity while no marked imbalance between loci was apparent. Amplification of 350-700 pg in a 15 µl reaction allowed accurate determination of DNA profiles in a cost-effective fashion.

Allelic frequencies were determined for the four COfiler™-specific loci in 230 unrelated Caucasian individuals from the Province of Quebec. Relevant parameters were calculated and the database was shown to be appropriate for forensic calculations. Ranges of stutter ratios and heterozygous peak height ratios were determined from the database samples for subsequent casework mixture interpretation. Forensic casework data will be presented.