iPLEX-STR - MULTIPLEX STR KIT FOR 18 STR LOCI AND AMELOGENIN

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We describe a new multiplex PCR kit validated for use with single source samples. This multiplex PCR kit interrogates 18 human STR loci and the gender determination locus Amelogenin. The 18 STR loci include the original 13 CODIS (Combined DNA Index System) loci and 5 ESS (European Standard Set) loci. iPLEX-STR PCR primers generate amplification products between 75 and 420 bp in length and are labeled with blue, green, yellow and red fluorescent dyes, making the kit compatible with all standard 5 and 6-dye capillary sequencers including ABI Genetic Analyzers, GE/Amersham MegaBACE DNA Analysis System, and Hitachi FMBIO instrumentation. Extraction, amplification and analysis has been optimized for buccal swabs, which are by far the most prevalent type of samples in family relationship testing laboratories.

The iPLEX-STR kit offers several unique features due to its lyophilized format: room temperature shipping and storage and extended (> 1 year) shelf life. We demonstrate that full DNA-STR profiles can be obtained from as little as 50 pg of purified DNA using an iPLEX-STR kit that has been stored at room temperature for 18 months.

The iPLEX-STR kits provide robust, reproducible DNA profiles from a range of PCR reaction volumes (6 µL to 25 µL) and can accommodate unpurified TE-Chelex extracts of buccal swabs, i.e., essentially direct PCR amplification from swabs.

Recently NCBI has incorporated the loci and binning information for iPLEX-STR into OSIRIS (Open Source Independent Review and Interpretation System) – an open source STR DNA analysis software program. OSIRIS is an excellent and inexpensive (free) alternative to commercial STR DNA analysis software and can readily analyze iPLEX STR electropherograms. Of course locus and binning information can also be easily uploaded to commercial analysis software as well. Together, iPLEX-STR and OSIRIS provide family relationship testing laboratories, or any DNA testing laboratory, with a cost effective option for human genetic identity testing.