DEVELOPMENT OF A NEW POWERPLEX® SYSTEM FOR Y-STR TESTING

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The PowerPlex® Y23 System amplifies the loci recommended in the European Minimal Haplotype, the two additional loci recommended by SWGDAM, as well as twelve additional loci for a total of 23 loci in a single reaction. Six of these loci are new to commercial Y-STR multiplexes and are highly discriminating loci (DYS481, DYS533, DYS549, DYS570, DYS576, and DYS643). This system is optimized for amplification of DNA from purified extracts and also accommodates direct amplification from a variety of substrates, including blood and buccal samples on FTA® paper (GE Healthcare/Whatman). Additionally, the system produces reliable Y-STR profiles from blood and buccal samples on other commonly used paper substrates treated with the Promega PunchSolution™ Kit and buccal swabs treated with the Promega SwabSolution™ Kit. The system employs rapid cycling (~100 minutes for purified extracts or ~90 minutes for direct samples) providing significant time savings from previous commercially available kits. Robust Y-STR profiles are consistently detected in the presence of excess female genomic DNA using the PowerPlex® Y23 System. Complete Y-STR profiles are obtained from samples with 125pg of male DNA mixed with 3000ng of female DNA. The multiplex has demonstrated tolerance to inhibitors such as hematin, tannic acid and humic acid. The additional loci, faster cycling time, reliability and robustness of this system culminate in a superior tool for Y-STR analysis. ⌘