DEVELOPMENT OF A NOVEL FAST STR MULTIPLEX ASSAY FOR GENOTYPING THE EUROPEAN STANDARD SET OF MARKERS

Matthew Ludeman, Robert Green, Siddhita Gopinath, Vivian Nguyen, Laura Pelleymounter, Lisa Calandro, Marc Short and Julio Mulero, Thermo Fisher Scientific

Forensic DNA typing is a constantly evolving field driven largely by improvements in the capabilities of STR detection assays. These improvements have enhanced the ability of forensic laboratories to obtain DNA profiles from challenging samples.

We have developed a 6-dye STR assay which places the SGM Plus® PCR Amplification Kit loci as mini- and midi- STRs, making its marker layout complementary to that of the NGM Select™ PCR Amplification Kit. This new layout has been achieved through extensive primer redesign and use of an additional sixth dye channel. The resultant new case work kit is not only highly concordant (>99.5%) to the NGM SElect kit but also features extra primers to reduce rare instances of false homozygosity and a Y indel marker to provide gender confirmation in amelogenin Y-deficient males. Additional differentiating features relative to the NGM Select kit include faster time to results (<60 minute thermal cycling time), expanded allelic ladders at certain loci to assist in genotyping of rare alleles, and higher sample input volume (up to 15 uL) to increase sensitivity with low concentration samples.

The new assay has demonstrated the ability to amplify a diverse range of sample types, representative of the types of evidence submitted to operational forensic laboratories. When compared to the NGM SElect Kit in models of DNA degradation and common models of inhibition it produces DNA profiles with higher allele recovery in particular from the SGM Plus loci by virtue of the redesigned marker positioning.

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