ALTERED PRIMER BINDING SITES AND NON-SYMMETRICAL AMPLIFICATION IN CODIS 13 LOCI

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CODIS 13 loci are now being utilized by many parentage testing laboratories as the standard test systems. We have identified a series of cases in our laboratory in which apparent null alleles have resulted in either single maternal exclusions, single paternal exclusions or are included in cases with two paternal exclusions. Primary testing was performed using the ABI Profiler/Cofiler Series on the ABI 3700. Those cases, in which questionable null alleles contributed to exclusion, were further examined, when possible, by DNA gel electrophoresis using in-house primer sets. Results from these cases fell into four categories: Cases in which the DNA gel analysis confirmed the ABI results; Cases in which DNA gel analysis revealed shared alleles not previously identified in the parties; Cases in which DNA gel analysis revealed potentially different primer binding sites for the same allele within individuals; Cases in which DNA gel analysis revealed alleles not identified in the ABI analysis due to non-symmetrical amplification of alleles. In these latter three instances, the alleles identified using the alternative primer sets resulted in the elimination of the apparent inconsistencies. These observations serve to highlight the need for caution in reporting of exclusions involving null alleles.