A NEW ROBUST HUMAN AND MALE SPECIFIC DNA QUANTITATION SYSTEM THAT MONITORS DNA INTEGRITY

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Current qPCR based quantitation systems allow forensic DNA analysts to determine the optimal amount of human DNA to add to an STR amplification reaction and also aid in determining whether autosomal or Y-STRs are likely to be more informative based on the auto/Y quantitation ratio. However, these methods are not capable of determining the degree of degradation of a DNA sample. In addition, the current qPCR quantitation systems are more sensitive to PCR inhibitors than the more recently developed STR amplification systems. To address these issues we have developed a new quantitation system that incorporates a new larger autosomal amplicon that may be used to monitor the integrity of a DNA sample. This larger amplicon is generated from a separate region of the same multicopy autosomal target used for quantitation and thus allows for determination of DNA degradation events down to very low levels of template. The master mix has also been improved to increase robustness to PCR inhibitors.

We will present data demonstrating sensitivity, resistance to inhibitors, ability to detect DNA degradation, species specificity, and male specificity at various ratios of male to female DNA.

Key Words: qPCR, quantitation, DNA Integrity, PowerPlex, mini STR, inhibitors, degraded DNA