

Improving Sample Analysis and Interpretation Using QIAGENs Latest Investigator STR Multiplex PCR Assays with a Novel Quality Sensor

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Abstract : The European STR standard set (ESS) of loci as well as the new expanded CODIS core loci set as recommended by the CODIS Core Loci Working Group, has led to a higher standardization and harmonization in STR analysis across borders. Various multiplex PCRs assays have since been developed for the analysis of these 17 ESS or 23 CODIS expansion STR markers that all meet high technical demands. However, forensic analysts are often faced with difficult STR results and the questions thereupon. What is the reason that no peaks are visible in the electropherogram? Did the PCR fail? Was the DNA concentration too low? QIAGEN's newest Investigator STR kits contain a novel Quality Sensor (QS) that acts as internal performance control and gives useful information for evaluating the amplification efficiency of the PCR. QS indicates if the reaction has worked in general and furthermore allows discriminating between the presence of inhibitors or DNA degradation as a cause for the typical ski slope effect observed in STR profiles of such challenging samples. This information can be used to choose the most appropriate rework strategy. Based on the latest PCR chemistry called FRM 2.0, QIAGEN now provides the next technological generation for STR analysis, the Investigator ESSplex SE QS and Investigator 24plex QS Kits. The new PCR chemistry ensures robust and fast PCR amplification with improved inhibitor resistance and easy handling for a manual or automated setup. The short cycling time of 60 min reduces the duration of the total PCR analysis to make a whole workflow analysis in one day more likely. To facilitate the interpretation of STR results a smart primer design was applied for best possible marker distribution, highest concordance rates and a robust gender typing.

Keywords : PCR, QIAGEN, quality sensor, STR

Conference Title : ICFS 2015 : International Conference on Forensic Sciences

Conference Location : London, United Kingdom

Conference Dates : June 28-29, 2015