ANALYSIS AND INTERPRETATION OF DIFFICULT SAMPLES - THE INTERACTION OF A SUITABLE DNA QUANTIFICATION KIT WITH THE RIGHT STR ASSAY MAY FACILITATE PROCESSING OF CRITICAL TRACE MATERIAL

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In particular the analysis of challenging samples – low template, inhibited, degraded or any combination thereof – can benefit from quantification and STR assays that are well adapted to each other. Such workflows can ensure high first pass rates, but also assist in choosing appropriate rework strategies where necessary. Internal controls integrated into quantification as well as STR assays can be used to assess the quality of a sample and to monitor if amplifications work properly.

The Investigator Quantiplex HYres assay uses a multi copy target to provide sufficient sensitivity to allow a good correlation to STR results even at the lower end. A zero quant obtained is very likely corresponding to no STR profile. The internal control of the quantification indicates potential inhibition. It has been designed to respond to inhibition before the quantification itself is affected, but to be robust enough to make predictions on very tolerant STR assays, as the Investigator 24plex QS kit. However, in particular due to variable template input amounts used for the STR assay, this prediction can never be perfect. This prompted us to integrate an internal performance control, the so-called Quality Sensor (QS) into STR assays as well. Using this advanced Quality Sensor allows deriving unambiguous information on inhibition or degradation to better interpret the STR result and to select the most appropriate strategy for further processing of the sample.

We show data on case studies to illustrate a more efficient and cost-effective laboratory workflow based on the combined use of these assays.