

## **PROCESSING CHALLENGING CASEWORD SAMPLES: NEW PROTOCOLS ON THE QIASYMPHONY SP/AS INSTRUMENTS**

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The QIASymphony SP/AS instruments allow fully automated extraction and PCR assay setup of forensic casework samples. We recently developed new extraction protocols that further optimized the performance and increase sensitivity. Binding of DNA to the magnetic particles was enhanced by introducing a heating step prior to mixing, resulting in Casework Advanced protocols. In addition, elution in small volumes has been improved by using a mineral oil overlay that eliminates any dead volumes that cannot be recovered and that typically lead to reduced overall yields with decreasing elution volumes. The oil overlay is only used during the elution process, but there is no transfer of oil into the final eluate. These High Efficiency (HE) protocols now are available for 30 – 80 µl volumes. With the release of a new software package, normalization of STR PCR setup was introduced to the AS reaction setup module. The template amounts added to each reaction can be automatically adapted to a user defined target based on imported concentration data of samples. In order to save PCR consumables and time, minimal DNA template amounts can be set as well to automatically exclude samples from downstream STR analysis if no reportable result is to be expected. While this approach is economical, it requires a quantification method that is very sensitive and reliable to minimize any risk of false negative results. The Investigator Quantiplex Kits were developed to correlate well to the Investigator STR Kits or STR assays from other suppliers for samples close to the detection limit.