

FEASIBILITY OF USING THE QIAGEN QIACUBE TO HELP AUTOMATE THE DIFFERENTIAL EXTRACTION PROCESS

April Leon¹, Mark Guilliano², and Angelo Della Manna¹

¹Alabama Department of Forensic Sciences, Birmingham AL;

²QIAGEN, Germantown, MD

Differential extractions are an essential forensic biology laboratory technique, as sexual assault related evidence comprises a large proportion of the overall forensic biology evidence. The evidence in a sexual assault case, which is often a mixture of male and female DNA, involves the examination, enrichment and development of a profile from the sperm cells that are often contained in an intimate sample. The differential extraction procedure preferentially lyses the epithelial cells in the sample initially, and pellets the sperm cells. The supernatant containing primarily epithelial DNA is removed as the “non-sperm” fraction, and multiple washes are performed to provide the analyst with an enriched sperm fraction. This process is repetitious, time consuming and requires significant hands-on time from a qualified DNA analyst. The QIAcube, containing a centrifuge, was evaluated in an effort to determine its feasibility of inserting it into the differential extraction procedure to automate the multiple wash steps, thereby providing additional hands-free time for the qualified DNA analyst.