

INTERNAL VALIDATION STUDY OF THE RAPIDHIT™ 200

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RapidHIT™ 200 device (IntegenX® by Thermo Fisher Scientific) is a fully integrated sample-to-profile system for rapid human identification based on DNA analysis, providing several advantages over the traditionally DNA profiling methods in terms of automation, speed of analysis and mobility. Nevertheless, before implementing RapidHIT™ 200 into routine forensic applications, workflow and results quality must be rigorously validated with respect to robustness, performance and compatibility to CE-based data by carrying out internal validation. After obtaining positive results from properly conducted validation, DNA testing results obtained by using RapidHIT™ 200 can become a useful investigative tool for the law enforcement community.

We present the evaluation of RapidHIT™ 200 device for short tandem repeat (STR) genotyping using GlobalFiler® Express PCR Amplification Kit cartridges (Thermo Fisher Scientific), including experiments to assess reproducibility, concordance, contamination, sensitivity, mixture analysis and overall reliability. To examine versatility of RapidHIT™ 200 System we review the sensitivity of the 'Run Other Samples' protocol for processing evidence samples commonly found in forensic casework including buccal swabs, blood stain, semen, cigarette butts, hair, saliva from bottles, chewing gum, postage stamps and trace/touch DNA from mobile phones, weapons and gloves. In order to validate the results generated with the RapidHIT™ 200, we performed the same analysis with standard STR typing methods already practiced in forensic DNA laboratories. The results generated by both of the methods were compared for concordance and quality of profiles.