Implementation and Initial Experiences of Messenger RNA Body Fluid Testing in Forensic Case Work


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ESR developed a multiplex PCR system known as CellTyper that utilises messenger RNA (mRNA) and can identify blood, saliva, semen, menstrual blood and vaginal material in individual stains or in mixtures of body fluids.

Furthermore, ESR has targeted the co-isolation of RNA and DNA from the same sample and, using the CellTyper multiplex, we can determine the type of body fluid present while also generating a DNA profile from the same stain using the most appropriate of our DNA profiling techniques.

Current presumptive body fluid screening methods were explored, highlighting their strengths and limitations in a forensic context. From this, the reasons to develop a method of body fluid identification for key body fluids encountered in a forensic context were proposed.

Here we presented our experiences of casework implementation and early casework samples, as well as more operational requirements such as raising the profile and managing customer expectations of a new forensic technique; and balancing the significant quality control and quality assurance requirements.

We also considered the relevance of body fluid identification with respect to transfer and persistence scenarios. Examples were given where body fluid identification enabled us to assist in addressing the activity involved and enabled us to distinguish between two alternative scenarios put forward during the course of the investigations.