## O18. A novel method for the simultaneous co-isolation of DNA and mRNA for forensic casework samples

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Current DNA and mRNA co-isolation methods proposed for the analysis of forensic casework samples involve the physical separation of the DNA and mRNA phases. Whilst this separation is useful, it does lead to increased opportunities for contamination as there are now two down-stream work processes. Also, the scientist's opinion as to the attribution of a DNA profile to a particular body fluid would not be particularly robust. Furthermore, these methods often use hazardous chemicals such as phenol/chloroform and are time costly.

The use of silica-coated and oligo-dT coated magnetic beads offers a co-isolation method that delays the separation of the DNA and the mRNA phases, thus reducing the opportunities for down-stream contamination. The magnetic beads method does not use any hazardous chemicals, thus offering safer and faster co-isolation. The aim was to develop a novel co-isolation technique that was at least comparable to the single isolation methods of DNA and mRNA.

Saliva and blood stains were collected using buccal swabs and the finger prick method, respectively. The DNA/mRNA was extracted by a combination of silica coated magnetic beads and oligo-dT coated magnetic beads. The isolated and purified sample underwent nucleic acid quantification using a Nano-drop spectrophotometer. Analysis of the DNA phase was carried out using the Qiagen ESSPlex investigator on an ABI 310 genetic analyser. The mRNA phase underwent reverse transcription before undergoing PCR targeting body fluid specific mRNA markers. The mRNA amplicons were visualised using a 2% agarose gel. The DNA results acquired from this co-isolation method were then compared to the DNA results obtained from using single isolation method. A successful co-isolation method is one that does not adversely affect the quality of the DNA result.