

THE RESOLUTION OF UNUSUAL CASES BY THE USE OF AUTOSOMAL STRs, Y-STRs, AND mtDNA SEQUENCING ANALYSIS

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With the increase in public awareness of the availability of DNA typing, our laboratory has had requests to undertake the analysis of both unusual samples and case scenario resolution.

In routine paternity testing, samples used for the extraction of DNA usually consist of either blood or buccal cells. However, because of the unusual circumstances surrounding a case, these types of samples are not always available and therefore we have had to deal with any available samples which have included eyebrow hairs, ribs, internal organs, biopsy sections as well as paraffin embedded tissue sections from deceased individual. Complete or partial DNA profiles have been successfully attained from most of these unusual specimens but have varied according to the integrity and/or preservation of the original sample.

The recent introduction of both Y STR haplotype analysis using multiplexes developed in-house and mtDNA sequencing analysis has enhanced our ability to resolve difficult cases and certain relationships along the paternal and maternal lineages respectively. Difficult cases include those in which mutations, variations and missed alleles in the autosomal STR systems have been encountered.

Relationship and individuality cases have included motherless paternity cases, kinship analyses and the forensic examination and re-testing of material and clothing in both criminal and private cases. Other unusual requests have come from individuals requiring confirmation of identity of the donor in blood alcohol samples as well as diagnostic pathology/histology sections.