



### **B30 Forensic Casework Challenges Using the AmpF/STR® MiniFiler™ PCR Amplification Kit**

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The goal of this presentation is to show forensic casework result interpretation challenges using the ABI AmpFISTR® MiniFiler™ PCR Amplification Kit.

This presentation will impact the forensic community by demonstrating examples of forensic casework situations where a revised result interpretation guideline was required to properly report the results of the highly sensitive MiniFiler™ kit.

Amplifying STR's from old, degraded or trace-level DNA samples is the biggest concern for forensic DNA labs. A genetic system must be sensitive, robust and accurate. A major obstacle to overcome is the acquisition of genetic information given the integrity and amount of the DNA template. PCR amplicon sizes can restrict the ascertainment of a reasonable genetic profile. The design methodology adopted by AB for the development of the AmpF/STR® MiniFiler™ kit involves shifting primer sequences in closer to the area of locus variability. In doing so, the target region becomes reduced resulting in smaller PCR fragments. This adjustment increases the chances of PCR amplification and minimizes competition between loci in the multiplex. ReliaGene's in-house validation studies of the MiniFiler system included sensitivity, stutter generation, accuracy/reproducibility, precision, sample degradation, various tissue amplification, low copy techniques, and DNA mixtures. The data generated in these validation experiments gives some suggestion to the advantages and limitations seen in the MiniFiler™ PCR Amplification Kit when applied to forensic samples and was used in the establishment of result interpretation guidelines for MiniSTR's.

ReliaGene has performed the MiniFiler test on several forensic cases to date and has encountered situations where a revised result interpretation guideline was required to properly report the results of this highly sensitive kit. This presentation will highlight the implementation of these result interpretation guidelines in various forensic casework scenarios of degraded and low level template DNA. Sample types tested include fingerprint lift, 43-year-old bone, and various degraded tissue samples. Several case examples will be presented and discussed.

**MiniFiler Result Interpretation, Degraded Samples, Forensic Casework**