INVESTIGATION INTO THE "RE-AMP" PROCEDURE FOR USE ON FORENSIC SAMPLES

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The Forensic Service Division of the Detroit PD has been investigating the application of the "Re-Amp" or "Double Amp" procedure for problematic forensic samples. To perform a "Re-Amp", a very small aliquot of amplified forensic sample is used to perform an identical amplification. Thus both amplified and unamplified DNA goes into the reaction. To ensure the validity of the process, all reagent blank samples must be re-amplified as well. In all experiments performed, the samples were amplified for STRs (CSF, TPOX, TH01, vWA, D16S539, D7S820, D13S317 and D5S818) using the PowerPlex™ 1.1 kit.

A variety of samples from adjudicated casework were re-amplified and results can be roughly categorized based on the result obtained from the initial PowerPlex™ 1.1 amplification and the results from the "Re-Amp". In all samples evaluated, the maximum amount of DNA was placed into the initial PCR reaction for amplification. The following results were obtained:

When no loci or a single locus was detectable in the initial amplification reaction, one of two results was obtained. Either no additional information was obtained or a full STR profile was obtained from the "Re-Amp". When multiple loci (but not all 8) were detectable, but alleles were very faint in the initial amplification, a full STR profile was obtained from the "Re-Amp". When the initial amplification exposed a complex mixture of alleles from several individuals, one of two results was obtained from the "Re-Amp". Either an overabundance of the major profile occurred which obscured many of the minor contributor alleles or the same result was obtained with an additional problem of a loss of many of the fainter alleles from the minor contributors.

There are still questions regarding the "Re-Amp" procedure and its application to forensic casework. In some instance, the "Re-Amp" of the reagent blank samples results in bands at some of the smaller loci, primarily vWA. However, the bands are not located at the same alleles as the forensic samples. The nature of the reagent blank "Re-Amp" mystery bands is currently being investigated.