B152 Over 300 Y-STR Cases — What Have We Learned?

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The goal of this presentation is to educate the attendee about when Y-STR testing is appropriate and the effectiveness of Y-STR analysis, as well as provide them with a better understanding of what to expect with Y-STR statistics.

This presentation will impact the forensic community and/or humanity by educating the community regarding Y-STR analysis so they learn how to effectively utilize Y-STR testing in their own laboratories. Following this presentation, attendees will learn of Orchid's Y-STR experience and be able to evaluate their own Y-STR laboratory practices to see how they compare.

The number of cases submitted for Y-chromosome STR testing has increased as the forensic and jurisprudence communities have become more informed as to the advantages of Y-STR analysis. The Y-chromosome is passed from father to son in an unchanged form. Therefore, all males originating from the same lineage exhibit the same Y-chromosome profile. Y-STR testing is used to detect the presence of male DNA and is primarily employed when the amount of female DNA greatly overwhelms the amount of male DNA present in the sample, when few or no sperm cells are detected, when a differential extraction cannot be performed, to determine the number of male contributors to a sample, or when autosomal STR testing has yielded little or no male DNA profile. Since implementing Y-STR testing in the fall of 2002, Orchid Cellmark's Dallas laboratory has performed Y-STR analysis in more than 300 cases. The samples submitted for Y-STR testing include those from active forensic casework, cold cases, post-conviction cases, kinship studies, and samples analyzed for historical purposes. The data from these cases (submitted for Y-STR testing between 2002-2006) have been compiled and analyzed. The present study highlights several points of interest including: 1) what types of evidentiary samples were submitted for testing, 2) how much male DNA was present in each sample based on a male-specific quantitation assay, 3) which Y-STR multiplex was used, 4) was male DNA detected, 5) how many Y-STR markers yielded a result, 6) were mixtures prevalent, 7) was the suspect excluded as a possible contributor to the evidence, and 8) what statistics (if applicable) were generated. The data presented will help educate and inform the forensic community as to the effectiveness of and opportunities afforded through Y-STR testing, as well as provide the community with a better understanding of the statistical outcomes of such analyses.

Y-STR, DNA, Forensics

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