

THE IMPACT OF PROBABILISTIC GENOTYPING ON CASEWORK PREVIOUSLY REPORTED AS INCONCLUSIVE: A REVIEW OF CASES WITHIN THE CUYAHOGA COUNTY REGIONAL FORENSIC SCIENCE LABORATORY

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Probabilistic genotyping systems have been considered the future of DNA interpretation for several years, and they are finally being implemented in forensic casework as the present means of DNA interpretation. As the forensic DNA community embraces the change from manual interpretation to probabilistic genotyping, we must also take into consideration older cases that could benefit from this new technology by interpreting DNA profiles which were previously reported as inconclusive. While reinterpretation of these cases could be beneficial, it is unrealistic to go back and reanalyze every case. Our laboratory has recently validated and implemented Cybergenetics TrueAllele® technology for our casework analysis of complicated mixtures and low-level DNA profiles. As we proceed using probabilistic genotyping in current cases, we have adopted a policy of using this technology in old cases when requested. In the five months since we implemented TrueAllele® in casework, we have attempted probabilistic genotyping for interpretation in a total of fifteen cases that previously had at least one profile reported as inconclusive. Of these fifteen cases, twelve cases have generated positive inclusion results that aided the case, while in three of these cases the probabilistic genotyping either remained inconclusive or had no statistical support. To date, the oldest case we have reinterpreted using probabilistic genotyping is from 2014. It can be noted that these cases are likely still in the judicial system pending trial which is why they are only up to three years old. It is expected that there will be an increase in requests for reinterpretation of older inconclusive cases in the future once more cases have been reviewed by outside agencies. Probabilistic genotyping can be time consuming, due to the processing time of the TrueAllele® software, the added time of writing supplemental reports, and the additional time for the case to be reviewed; however, the benefits of the technology outweigh the disadvantage of added time. With probabilistic genotyping software, we can now use data for inclusions and exclusions that previously would have not have been used for interpretation because of too many contributors or low copy number partial DNA profiles. Our 80% success rate proves that the additional time and effort to reinterpret old cases can be worth the additional work for probative results.