

interpretation of forensic Y- chromosome DNA profiles

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Abstract

The introduction of forensic autosomal DNA profiles was accompanied by much controversy over how to evaluate the weight of evidence. The problems have been successfully addressed, and DNA profiling has gone on to revolutionise forensic science. Y-chromosome profiles are valuable when there is a mixture of male-source and female-source DNA, and interest centres on the identity of the male source(s) of the DNA. The problem of evaluating evidential weight is even more challenging for Y profiles than for autosomal profiles. Numerous approaches have been proposed. This talk will discuss two methods for interpreting a match between a suspect and a trace sample donor using Y profiles with high mutation rate (e.g. the Yfiler Plus kit). The first method is quantifying and reporting the number of males with a matching Y profile. This method can also include information about matching status of closely related individuals. This method has been used in court in Norway. The second method is using Y profile frequency estimates, more specifically the discrete Laplace method. This method been used in court in Germany, Norway, and Switzerland, and work is ongoing in using it routinely in Denmark.

About the Speaker

Mikkel Meyer Andersen is Associate Professor of Statistics at Department of Mathematical Sciences, Aalborg University, Denmark, and Affiliate Associate Professor of Forensic Statistics at Department of Forensic Medicine, University of Copenhagen, Denmark. Mikkel has a B.Sc. in mathematics and computer science, a M.Sc. in mathematics (specialised in statistics), and wrote his Ph.D. dissertation on Forensic Statistics of Lineage DNA Markers. Mikkel's area of interest is (still) forensic statistics with focus on forensic lineage DNA markers, for example from Y chromosomes and mitochondria. Mikkel and colleagues have made two methods for interpretation of Y profile evidence and both have been used in court. Mikkel has been an expert witness two times in Norway in a murder case