**Y-CHROMOSOME MARKERS IN RELATIONSHIP TESTING**

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The Institute of Forensic Genetics is the only laboratory in Sweden that performs paternity and relationship testing that is accepted in court. The laboratory has performed paternity testing since 1925 based on different techniques from analysis of blood group and enzyme markers, to present DNA markers. Since 1997, the analysis for parentage testing is accredited. We use 9 STR-markers for routine cases and add 3 VNTR-markers for more complex cases. When even more information is needed, we can analyze 12 additional STR-markers. For statistical evaluations we use a Swedish population database established at the Institute. Our latest set of markers to be accredited is the Y-chromosome minimal haplotype markers consisting of 8 Y-chromosome STR-markers agreed upon by the European Forensic Community. Our database for these analyses contains 350 haplotypes, confirmed by father-son analyses. Our experience from casework is still limited and consists of 14 cases, 9 with tests for relationship, 2 for paternity, and 2 for identification of human remains. Some of these cases are complex and go several generations back; some are confirmations of single exclusions/mutations. Interestingly, one case consists of both a maternity- and a paternity investigation in which we also had to affirm the gender of the persons involved. We will convey our experience from selected cases in which the analyses of Y-chromosome markers have been of utmost importance and also throw some light upon a case of identity investigation where neither
Y-, X-chromosome or mtDNA would solve the case, but just a lot of autosomal markers did. Hopefully this presentation will lead to a discussion about difficult cases of relationship testing.