



### **A149 Internal Validation of the Short Amplicon Y-STR Multiplex System for Use in Forensic Casework**

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After attending this presentation, attendees will understand a new Y- miniplex system that may be a supplemental tool in the examination of degraded forensic casework samples with other commercial kits.

This presentation will impact the forensic science community by demonstrating how Short Amplicon Y-STR makes it possible to analyze degraded forensic casework samples effectively and reliably.

Y-chromosome short tandem repeat (Y-STR) markers are being used as tools for distinguishing male DNA as is present in many sexual assault samples. DNA samples from forensic cases, however, are often degraded and/or tainted by environmental contaminations. To increase the success rate of Y-STR genotyping for degraded forensic samples, a new Y- miniplex system (DYS391, DYS439, DYS385, DYS392, DYS390, DYS438, DYS635) was developed in previous research (M.J. Park, K.J. Shin, 2007). In this study, an internal validation study of a new Y- miniplex system was performed to implement into routine forensic casework analysis. In a concordance study between the commercial Y- STR kit and the new Y-miniplex system, no genotype differences were revealed in 100 randomly selected Korean-male individuals. A sensitivity test using serially diluted standard 9948 male DNA showed that all the values of loci in the Y-miniplex were reliable at template concentrations as low as 30 pg. In the male-male mixtures, a complete profile from the minor component was detected up to 1:16 ratio. Complete Y-STR profiles were obtained when 30 pg male DNA was mixed with female DNA at ratios up to 1:8000. According to results from the test on degraded and tiny amounts of Forensic DNA samples (old bone & rape case sample), the new Y-miniplex system was proved to be quite an effective tool for analyzing forensic DNA samples. It is concluded that the new Y-miniplex system appears to be a possible supplemental tool in the examination of degraded forensic casework samples with other commercial kits.

**Short Amplicon, Forensic Casework, miniSTR**