

## **EVALUATION OF INNOTYPER21® SYSTEM USING 469 UNRELATED KOREAN DNA SAMPLES FOR THE APPLICATION INTO TRACE AND DEGRADED DNA**

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DNA genotyping using short tandem repeat (STR) has been improved but still have the limitation to the highly degraded and trace DNA samples. The Innotyper21® system was constructed with *Alu* elements that are primate specific short interspersed nuclear elements (SINEs), a category of retrotransposable elements (REs). This system produces the short amplicons ranging from 60bp to 125bp as two possible allelic states, insertion or null, therefore, it has the strength on the analysis for the limited DNA in terms of quantity and quality. In this study, the utility of this system was evaluated through the internal validation on the studies of sensitivity, degradation, and mixture samples. In addition, 469 Korean males and females were analyzed with the Innotyper21® genotyping kit. Sensitivity test showed that more than 90% of alleles were determined when the input DNA was as low as 25pg. Moreover, the challengeable samples including hair shafts and case work samples were tested. A different type of allele, one base pair more than insertion allele, was detected on the locus of NBC51 on 6 samples and confirmed by Sanger sequencing. We plan to investigate the statistical values for the human identification parameters and compare the statistical results with the different populations from the previous studies.