DEVELOPMENT AND VALIDATION OF THE NEW INVESTIGATOR ARGUS X-12 QS KIT

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Analysis of X-chromosomal STRs provides a powerful tool to complement autosomal and Y-chromosomal STRs in solving complex kinship deficiency cases. The Investigator Argus X-12 kit has been widely used for this purpose during the past years. In order to improve robustness and speed, and to facilitate analysis further, we recently developed an updated version of the assay.

The second version kit makes use of the recently developed Fast Reaction Mix 2.0, which allows short PCR cycling protocols and provides a high inhibitor tolerance. A standard 30 cycle PCR using 500 pg of template DNA now can be finished within about 70 min. A Quality Sensor has been added as an internal control to indicate if the PCR reaction has performed properly. D21S11 was included as an autosomal alignment marker. By comparing the genotype of the alignment maker between X-chromosomal and autosomal STR analysis done within a case, potential mix up of samples can be detected. No changes to the 12 X-chromosomal STR markers were made. Only minor changes to their primers were applied, e.g. to improve A-addition to the final PCR product and to obtain a cleaner fluorescent baseline. Additional SNP primers have been introduced to overcome null alleles due to primer binding site mutations of DXS10101, DXS10146 and DXS10148 that have been found at elevated frequencies within African populations (1). The allelic ladder has been complemented by 14 additional alleles.

We will show data of the development and validation of the Argus X-12 QS kit.

1. Elakkary S, Hoffmeister-Ullerich S, Schulze C, Seif E, Sheta A, Hering S, Edelmann J and Augustin C: Genetic polymorphisms of twelve X-STRs of the Investigator Argus X-12 kit and additional six X-STR centromere region loci in an Egyptian population sample. FSI Genetics. 2014; Volume: 11
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