INTERNAL VALIDATION POWERPLEX® ESX AND ESI KITS

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The DNA- Laboratory Eurofins Medigenomix is accredited according to ISO 17025 in the field of Forensic Genetics (Parentage Tests, DNA-traces, and Comparison samples). We are working for customers worldwide. Therefore we perform STR analyses with different marker sets depending on customer requests. Before kits are used in routine analysis they have to be validated internally in our laboratory.

After first PowerPlex® ESX and ESI Kits were now available we have performed an internal validation study.

In this study the following kits were included:

- Promega PowerPlex ESX 16 and ESX 17
- Promega PowerPlex ESI 16 and ESI 17
- AmpFℓSTR® SEfiler Plus™ and SGM Plus®
- ABI AmpFℓSTR® MiniFiler™

The performance of these kits was compared in the following areas:

1. Sensitivity (from 1 ng to 31,2 pg DNA (five genome equivalents))
2. Mixtures (mixed DNA from two individuals, ratios from 1:1 to 1:19)
3. Inhibition of PCR with some common inhibitors (e.g. Hematin, Indigo)
4. Capability to generate PCR profiles from degraded DNA samples
5. Species specificity (e.g. vertebrates, bacteria, mold)
6. Precision (multiple Injection of ladders)
7. Accuracy (comparing the size of the amplified allele to the size of corresponding allele in ladder)
8. Stutter ratio (ratio between stutter band and true allele peak)
9. Analysis of actual casework samples

At the point of time of this analysis the NGM Kit from ABI was not available and therefore could not be included in this study. The performance of the new PowerPlex kits was compared to AmpFℓSTR® SEfiler Plus™ and ABI AmpFℓSTR® MiniFiler™ kit (because from our internal validation we know that these are very sensitive kits) and to SGM Plus® kit (because this kit is the standard kit used for casework and reference sample analysis e.g. in Great Britain).