

POWERPLEX® ES: VALIDATION OF A EUROPEAN MULTIPLEX SYSTEM AND ITS IMPLEMENTATION TO ROUTINE CASEWORK

H.R. Schneider, S. Michaelis

Hessisches Landeskriminalamt, Wiesbaden, Germany



Multiplex PCR systems, which allow the simultaneous amplification of several STR loci, have proved to be indispensable for the efficient genotyping of forensic samples. The new PowerPlex® ES System, which has been recently designed by Promega Corporation, allows the coamplification of the core loci D3S1358, TH01, D21S11, D18S51, vWA, D8S1179, FGA and Amelogenin for gender determination. The core loci have been recommended by the European Network of Forensic Science Institutes (ENFSI) to enable pan-European comparisons of STR profiles. Additionally, the highly informative SE33 locus (ACTBP2) is included to i) satisfy the needs of the German DNA database and ii) to increase the match probability, which is conservatively quoted as 1 in 10^9 for reporting a full profile match.

In the last three months it was our aim to implement the new multiplex system into routine casework. Therefore, we tested the efficiency and reproducibility of the system under several test conditions including variation of the DNA input, reaction volume and cycle numbers. Furthermore, its sensitivity was compared to other commercially available multiplex systems.

In the current study we describe validation studies performed to test the robustness and reproducibility of the PowerPlex® ES multiplex on samples routinely found in casework, including old and degraded DNA and stains with limited amounts of DNA. The studies demonstrated that PowerPlex® ES will be a helpful tool in forensic casework.