# DEVELOPMENTAL VALIDATION OF THE AMPFLSTR® NGM™ KIT, A ROBUST AND HIGHLY DISCRIMINATORY STR MULTIPLEX

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Following the recommendations of the ENFSI/EDNAP groups of European forensic scientists, we have designed a new 16-plex STR kit that combines enhanced discriminatory power with improved PCR chemistry. The AmpFLSTR® NGM™ Kit ("NGM," an acronym for "Next Generation Multiplex") includes the original 10 STR loci from the AmpFLSTR SGM Plus® kit (D3S1358, vWA, D16S539, D2S1338, D8S1179, D19S433, TH01, FGA, D21S11, D18S51) together with five additional STRs (D10S1248, D22S1045, D2S441, D1S1656 and D12S391) and the Amelogenin sex-determination locus. The same primer sequences for the 10 original SGM Plus kit core loci have been retained in the NGM kit to ensure concordance with existing database genotypes. The NGM kit is based on the same 5-dye technology used in other STR multiplexes like Identifiler®, SEfiler Plus™ and MiniFiler™ kits. However, the PCR chemistry and thermal cycling conditions have been modified to boost assay sensitivity, improve the detection of STR alleles in casework-type samples that may contain PCR inhibitors and/or degraded DNA, while also decreasing the time to results. We present the results of our developmental validation studies of critical performance parameters such as sensitivity, species specificity, performance with inhibited PCRs and degraded DNAs, mixture sample analyses, and power of discrimination calculations based on a survey of population samples.