

# The PowerPlex® Fusion 6C System

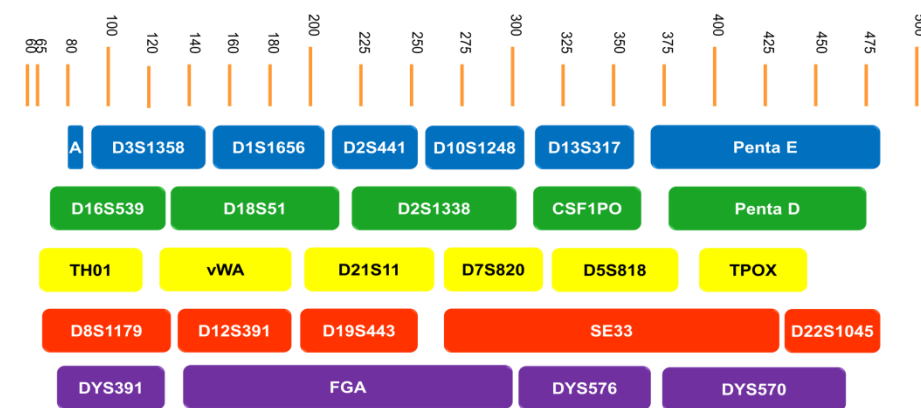
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## Abstract

The PowerPlex® Fusion 6C System is a 6-color STR system that combines the required (Amelogenin, D18S51, FGA, D21S11, D8S1179, vWA, D13S317, D16S539, D7S820, TH01, D3S1358, D5S818, CSF1PO, D2S1338, D19S433, D1S1656, D12S391, D2S441, D10S1248, DYS391) and recommended (TPOX, D22S1045, SE33) expanded CODIS core loci. It includes Penta E which is a standard STR locus in Asia and Penta D which has been used worldwide for more than 10 years. In addition, two rapidly mutating Y-STR loci, DYS570 and DYS576, have been added to the multiplex; this will improve the determination of the number of male contributors in a complex mixture. The PowerPlex® Fusion 6C System has a short cycling time of approximately one hour and is compatible with direct amplification of single source samples from a variety of substrates.

## PowerPlex® Fusion 6C System Layout



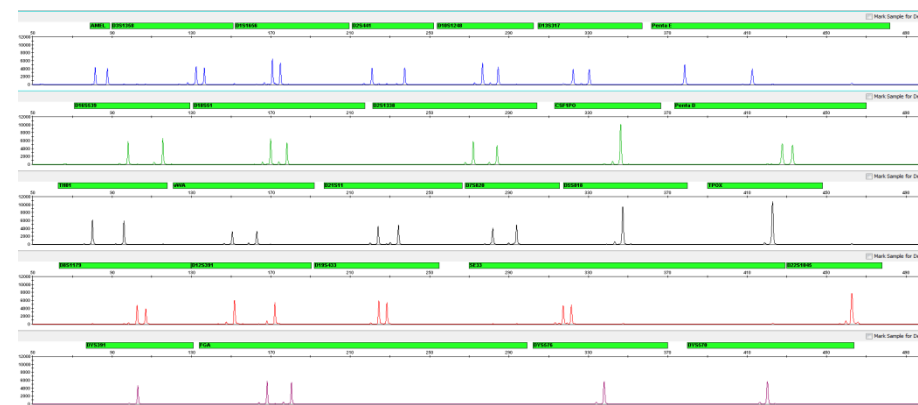
A= Amelogenin

## PowerPlex® Fusion 6C Compatible Samples

Sample Type	Reaction Volume	Number of Cycles	Final Extension	PunchSolution™	SwabSolution™	AmpSolution™	Amplification Time
Purified DNA	25µL	29	5:00	-	-	-	61 minutes
Blood FTA®	25µL	26*	10:00	-	-	-	60 minutes
Blood FTA®	12.5µL	25*	10:00	-	-	Yes	58 minutes
Buccal FTA®	25µL	26*	10:00	-	-	-	60 minutes
Buccal FTA®	12.5µL	25*	10:00	-	-	Yes	58 minutes
Blood non-FTA®	25µL	26*	10:00	Yes	-	-	60 minutes
Blood non-FTA®	12.5µL	24*	10:00	Yes	-	Yes	56 minutes
Buccal non-FTA®	25µL	25*	10:00	Yes	-	-	58 minutes
Buccal non-FTA®	12.5µL	24*	10:00	Yes	-	Yes	56 minutes
Buccal Swab Extracts	25µL	26*	10:00	-	Yes	-	60 minutes
Buccal Swab Extracts	12.5µL	25*	10:00	-	Yes	-	58 minutes

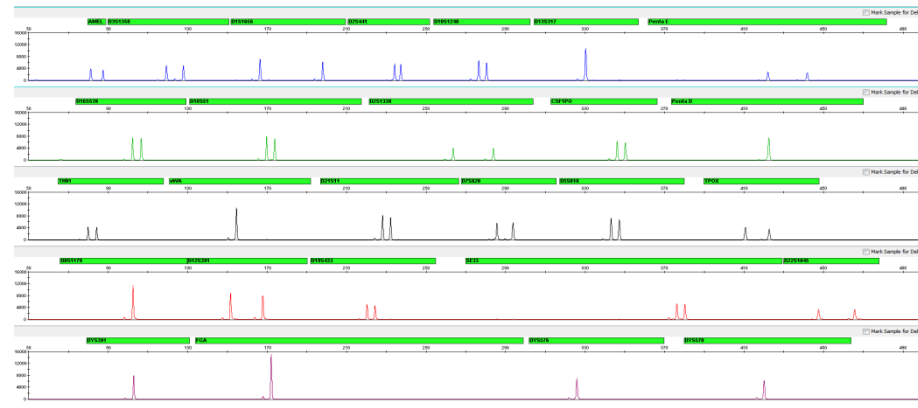
\*Number of cycles optimized at Promega. Labs will need to conduct cycle number studies as a part of their internal validation based on sample types and work-flow.

## 1ng Purified Human Genomic DNA (25µL Reaction)



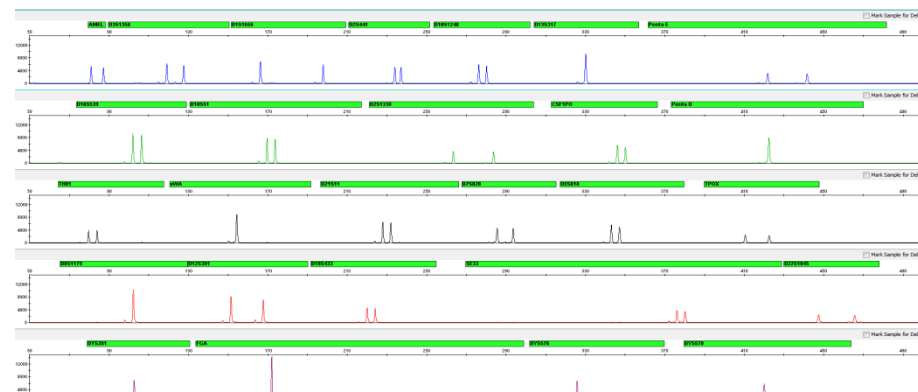
1ng of 2800M DNA amplified according to recommended protocol (29-cycles). Separated on a 3500 Genetic Analyzer using a 1.2kV, 15 second injection and a 13kV run voltage.

## Direct Amplification: Blood on FTA® (25µL Reaction)



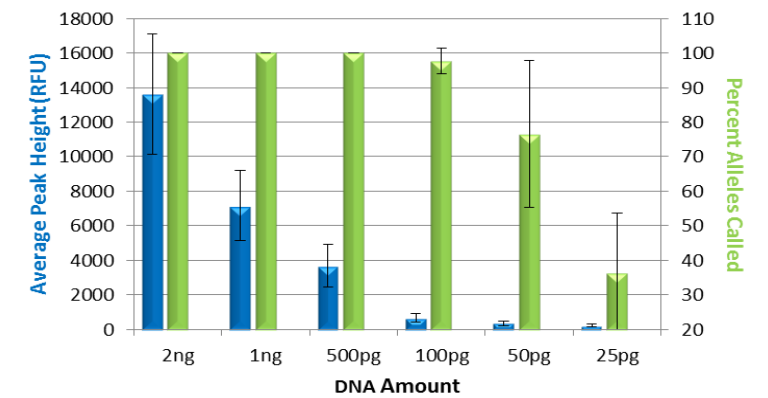
1-1.2mm punch of whole blood on FTA® paper amplified according to direct-amplification protocol (26-cycles). Separated on a 3500 Genetic Analyzer using a 1.2kV, 15 second injection and a 13kV run voltage.

## Direct Amplification: Blood on FTA® (12.5µL Reaction)



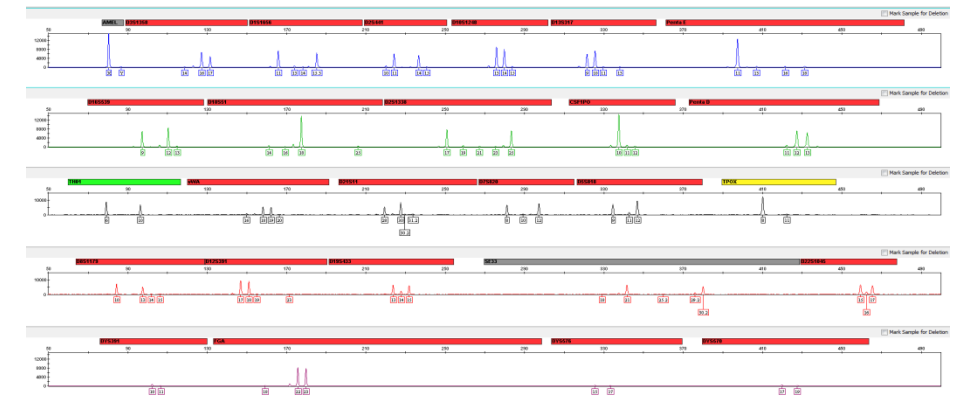
1-1.2mm punch of whole blood on FTA® paper amplified according to direct-amplification protocol (25-cycles) using AmpSolution™. Separated on a 3500 Genetic Analyzer using a 1.2kV, 15 second injection and a 13kV run voltage.

## Sensitivity Study



Summary generated from three DNA sources, amplified in quadruplicate according to recommended protocol. Separated on a 3500 Genetic Analyzer using a 1.2kV, 15 second injection. Analyzed with a 175RFU threshold.

## Mixture Sample 1:1:20 (Male1:Male2:Female)



Complex DNA mixture (1ng total) amplified according to recommended protocol (29-cycles). Despite the inclusion of each male contributor at a concentration of 45pg, both are clearly visible at the Y-STR loci. Separated on a 3500 Genetic Analyzer using a 1.2kV, 15 second injection and a 13kV run voltage. Analyzed with a 175RFU threshold.

## The PowerPlex® Fusion 6C System Summary

- A 6-color STR system used to amplify 27 total loci, including 3 Y-STR's
- Contains two rapidly-mutating Y-STR loci to aid in mixture deconvolution
- Compatible with purified DNA and direct-amp from common substrates
- Thermal cycling protocol is complete in about 60 minutes
- Compatible with the GeneAmp® 9700 and Veriti® thermal cyclers
- Optimized for 1ng of genomic DNA in a 25µL reaction volume
- Capable of direct-amplification in 25µL or 12.5µL reaction volumes
- Compatible with all 3500 and 6-color capable 3130 Genetic Analyzers

