

Optimized Fragment Analysis Kit to Determine Canine Parentage with ISAG-Recommended STR Markers



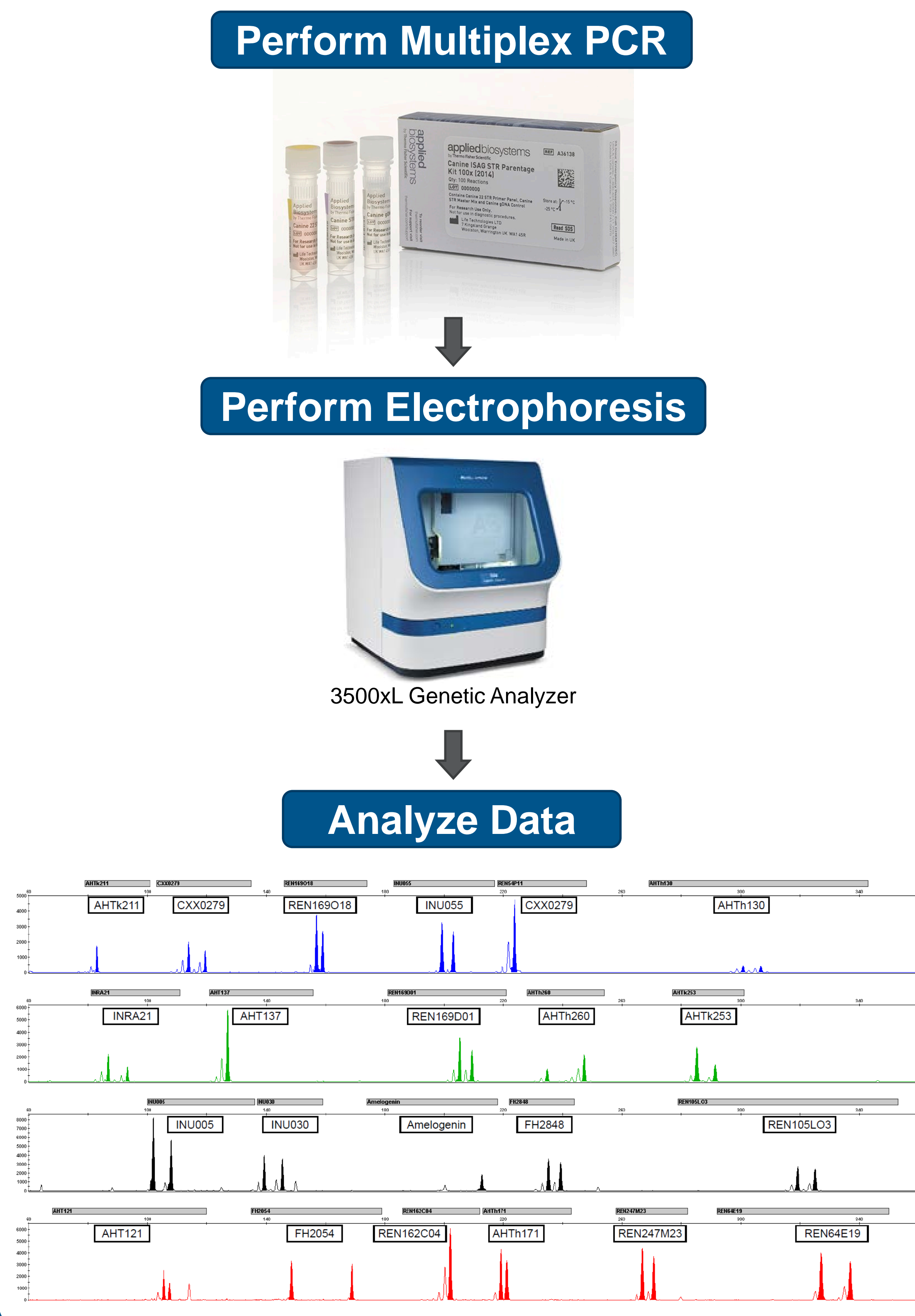
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Introduction

Microsatellites, also referred to as short tandem repeats (STRs), are the gold standard for parentage testing and identification including forensic analysis due to their Mendelian inheritance, and associated mutational diversity. Recently, the International Society of Animal Genetics (ISAG) added 3 new markers to the original 19-marker recommended panel for canine parentage determination, for a total of 22 loci. The Canine ISAG STR Parentage Kit (2014), from the AgriBusiness group at Applied Biosystems™ Thermo Fisher Scientific, is an optimized reagent kit for the analysis of the 22 STR loci recommended by ISAG in 2014.

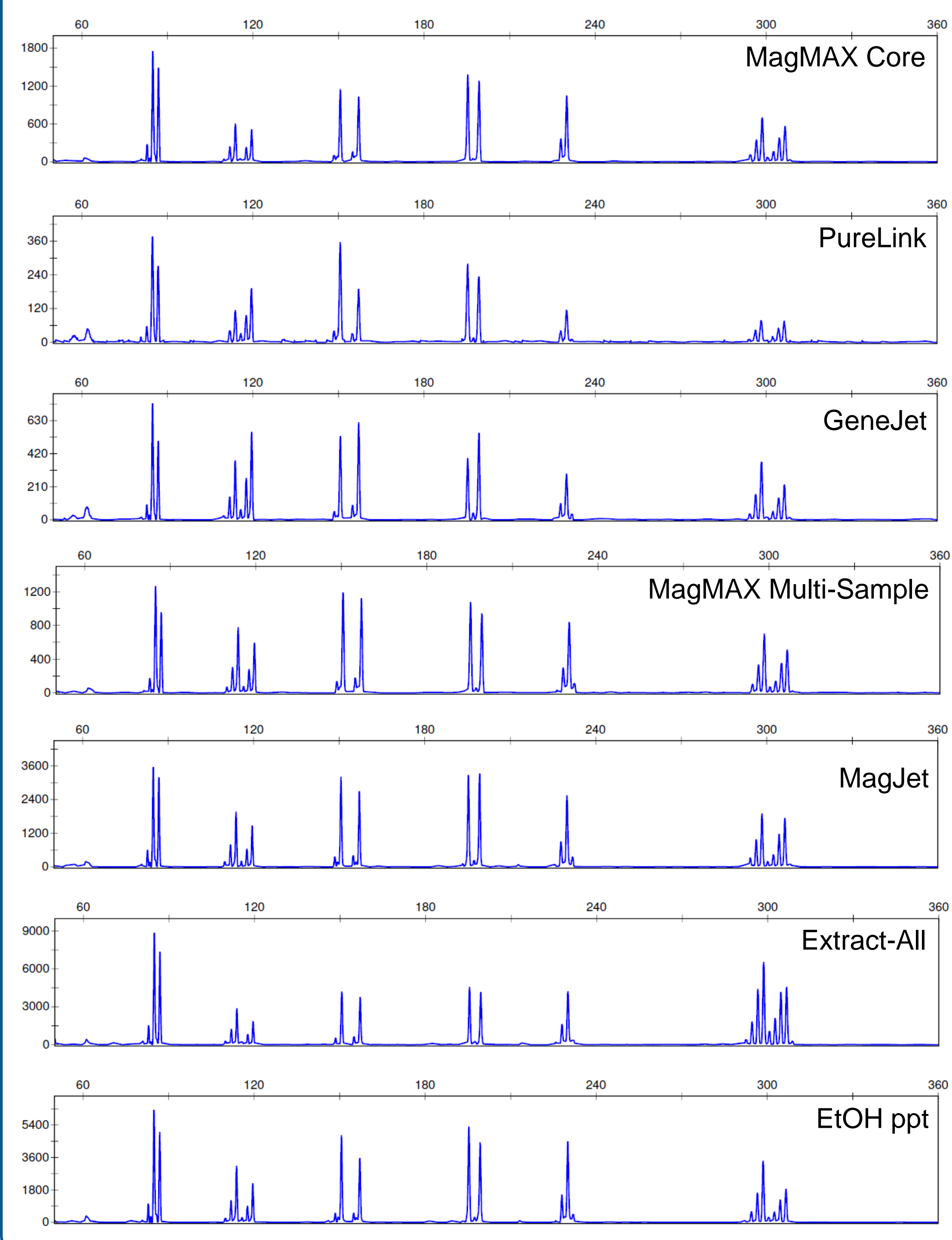
Materials and Methods

The Canine ISAG STR Parentage Kit (2014) includes primer mix, amplification master mix, and canine gDNA control. The kit allows for the simultaneous amplification of the 22 ISAG recommended STR loci in a single multiplex amplification reaction.



Sample Preparation Comparison

Buccal swab and oral fluid samples were prepared using various DNA extraction kits following the protocols recommended by the manufacturers. Amplicons were sized using capillary electrophoresis on Applied Biosystems 3500xL genetic analyzer and GeneMapper software was used to determine each sample's genetic profile.



Results

The performance of the Canine ISAG STR Parentage Kit (2014) has been demonstrated across more than 42 canine breeds, multiple different sample preparation methods, and across different genetic analyzer capillary electrophoresis instruments. The complete workflow takes less than one day from sample to results, and several samples can be analyzed together, depending on the genetic analyzer instrument capabilities.

Variables	Number Tested	Successful Genotyping Analysis?
Canine Breeds	42	Yes
Sample Collection Swabs	4	Yes
Sample Preparation Methods	7	Yes
Thermal Cyclers	4	Yes
Thermal Cycler Ramp Speeds	2	Yes
Genetic Analyzers	2	Yes

Conclusion

The Canine ISAG STR Kit (2014) enables customers to comply with ISAG recommendations with efficient out-of-the box optimized multiplex amplification reaction and fragment analysis while reducing risk of supporting complex homebrew panels.

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