

Technical Information

Investigator[®] Argus Y-28 QS Kit

Best-in-class performance and powerful discrimination for Y-chromosomal analysis

Y-STR applications are well established in mixture or sexual assault analysis. They are also essential in the resolution of paternity disputes concerning male offspring and in other types of paternal kinship testing, including historical cases. The new Investigator Argus Y-28 QS Kit was designed for optimal performance and unparalleled discrimination power, helping to obtain trusted results for challenging samples even in a high female background (Figure 1). In particular, the inclusion of six rapidly mutating Y-STRs (DYS449, DYS481, DYS570, DYS576, DYS518 and DYS627) supports the resolution of paternal lineages and discriminates between closely related males (Figure 2).

Features of the Investigator Argus Y-28 QS Kit include:

- 6-dye chemistry for analysis of 27 YChr STR markers, of which 6 are rapidly mutating (RM)
- Integrated performance control with the Quality Sensor, optimized for ≥ 24 cycles
- Optimized Fast Reaction Mix 3.0 for best-in-class sensitivity, inhibitor tolerance and specificity even in high female backgrounds
- A single kit for both purified DNA and reference samples that simplifies the workflow

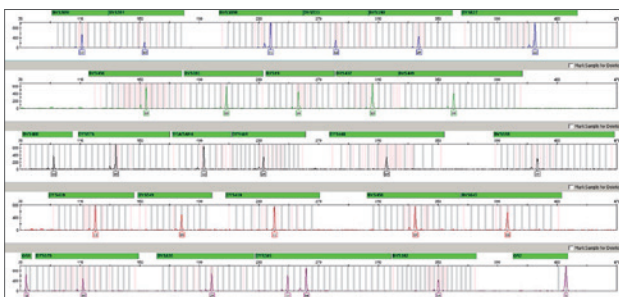


Figure 1. Electropherogram of male-female mixed DNA with the Investigator Argus Y-28 QS Kit. Analysis was performed on an Applied Biosystems[™] 3500 Genetic Analyzer using a mixture of 100 pg male DNA and 1 μ g female DNA. The Quality Sensor fragments QS1 (lowest panel on the left) and QS2 (lowest panel on the right) indicate a successful run.



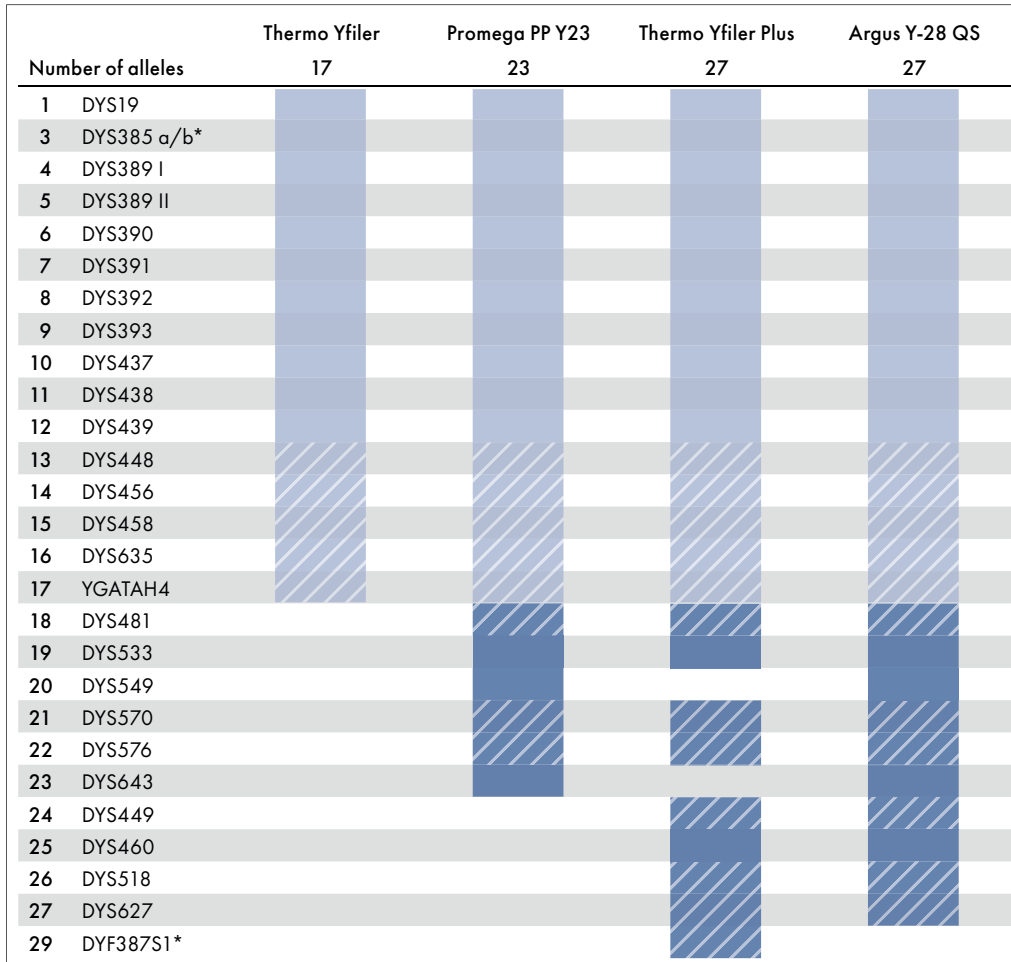


Figure 2. Marker distribution of YChr STR loci and their fit to commercial products.

*Duplicated loci are counted twice as they provide two alleles.

■ Extended Minimal Haplotype ▨ Yfiler Set ■ Commonly used ▨ Rapidly Mutating

Competence in workflow efficiency

Processing complex casework samples with male DNA in a very high female background in routine testing can be very challenging. We developed the Investigator Argus Y-28 QS Kit to meet this challenge. In addition, the Investigator Argus Y-28 QS Kit can be used to process single-source reference samples using direct PCR amplification from buccal cells or other reference materials, like blood on paper or epithelial swabs,

without the need for sample purification. This saves time and money by supporting any application in paternity and kinship testing where such reference materials are much more common. Furthermore, the Quality Sensor has been optimized in a way that gives trusted results even with the low cycling numbers that are common in direct amplification.

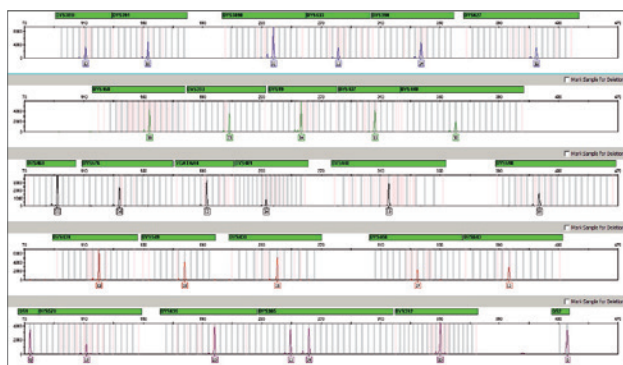
Unparalleled performance with compromised samples

Small DNA traces can be challenging for casework sample analysis. Inhibitors are often present in these traces and they can also contain mixtures of DNA from multiple contributors. In such situations, the high sensitivity, inhibitor tolerance and clean baseline provided by the Investigator Argus Y-28 QS Kit can greatly improve your success of producing a useable STR profile (Figure 3). To complement the kit's expected sensitivity and robustness, the Quality Sensor can indicate how best to proceed, helping you to reduce costs and increase process efficiency.

The benefits of the Investigator Argus Y-28 QS Kit include:

- Quality Sensor for better decision making and easier data interpretation
- Highest sensitivity and inhibitor tolerance provide a high pass rate for even the most challenging samples

(A)



(B)

Number of alleles detected at 50 RFU

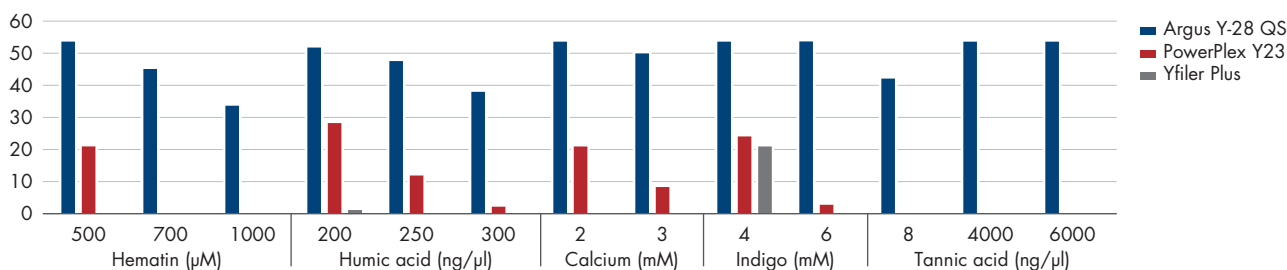


Figure 3. The Investigator Argus Y-28 QS Kit shows high tolerance of inhibitors. A Electropherogram of control DNA 9948 amplified with the Investigator Argus Y-28 QS Kit in the presence of hematin. Hematin at 750 $\mu\text{M}/\mu\text{l}$ did not interfere with amplification, and a high-quality profile was obtained. The Quality Sensor fragments QS1 (lowest panel on the left) and QS2 (lowest panel on the right) were not adversely affected, indicating a successful run. B Comparison study of amplification by the Investigator Argus Y-28 QS Kit and others in the presence of inhibitors. Sensitivity of the Investigator Argus Y-28 QS Kit was compared to the PowerPlex[®] Y23 Kit and the Yfiler[™] Plus PCR Amplification Kit in the presence of increasing amounts of common inhibitors. The Investigator Argus Y-28 QS Kit outperformed other methods based on STR allele recovery rates. PCR was performed in duplicate under standard handbook conditions and analyzed on an Applied Biosystems 3500xL Genetic Analyzer. Total numbers of alleles detected at a 50 RFU threshold in duplicate are shown. Alleles were detected above 50 RFU threshold in duplicated amplifications of control DNA 9948.

Table 1. Technical specifications of the Investigator Argus Y-28 QS Kit

	Sample type	
	Purified DNA	Reference samples
DNA input volume	Up to 15 µl	1.2 mm FTA punch or 2 µl swab lysate
Volume per reaction	25 µl	20 µl
Matrix	BT6	
Fluorescence dyes	6-FAM, BTG, BTY, BTR2, BTP, BTO	
Genetic Analyzers	Applied Biosystems 3500 Genetic Analyzers Applied Biosystems 3130/3130xl Genetic Analyzer (upgraded to 6 dyes)	

Table 2. Dyes and markers in the Investigator Argus Y-28 QS Kit

Dye	Markers					
6-FAM	DYS389-I	DYS391	DYS389-II	DYS533	DYS390	DYS627
BTG	DYS458	DYS393	DYS19	DYS437	DYS449	
BTY	DYS460	DYS576	YGATAH4	DYS481	DYS448	DYS518
BTR2	DYS439	DYS549	DYS438	DYS456	DYS643	
BTP	QS1	DYS570	DYS635	DYS385	DYS392	QS2

Ordering Information

Product	Contents	Cat. no.
Investigator Argus Y-28 QS Kit (100)	Primer Mix, Fast Reaction Mix 3.0, Control DNA, Allelic Ladder, DNA Size Standard, Nuclease-Free Water	383625
Investigator Argus Y-28 QS Kit (400)	Primer Mix, Fast Reaction Mix 3.0, Control DNA, Allelic Ladder, DNA Size Standard, Nuclease-Free Water	383627
Matrix Standard BT6 (50)	Matrix standard 6-FAM, BTG, BTY, BTR2, BTP and BTO	386224
Investigator STR GO! Lysis Buffer (200)	Lysis buffer for 200 swab samples	386516
Investigator STR GO! Punch Buffer (200)	Lysis buffer for 200 samples of epithelial cells or blood on paper	386526

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.

The Investigator Argus Y-28 QS Kit is manufactured in alignment with the ISO 18385 standard.

Learn more at www.qiagen.com/ArgusY-28QS.

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