

Optimizing CODIS STR applications

Recent advances in molecular forensics have resulted in kits with increased discriminatory power, inhibitor resistance, and sensitivity. This has led to investigative success in challenging forensic cases, which would have been impossible in the past.

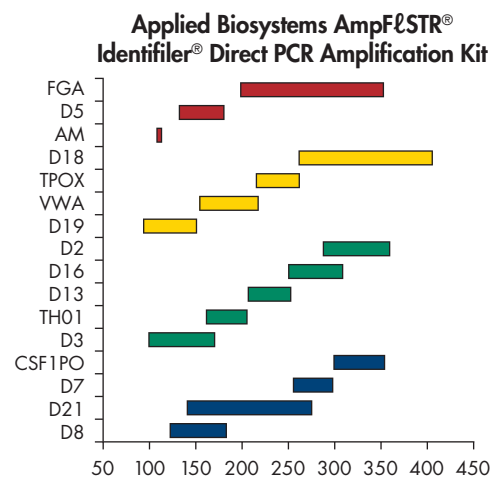
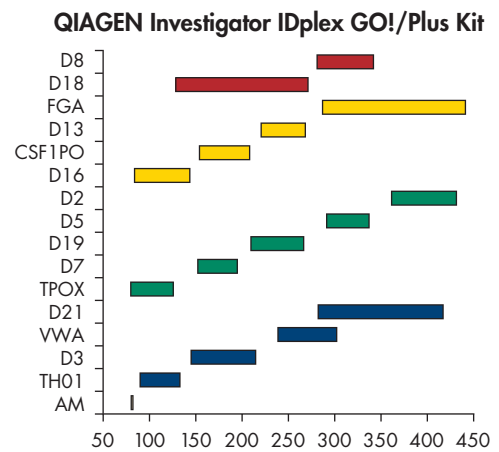
QIAGEN's CODIS STR assays feature intelligent primer designs which minimize allelic overlap, providing unambiguous results for increased statistical power (Figure 1). This reduces the risk of data misinterpretation and lowers overall cost by streamlining the workflow and decreasing re-work rates. The kits also have the best inhibitor resistance within their class and fast workflows (Figure 4) for the direct amplification approach (Investigator IDplex GO! Kits) as well as the traditional approach after sample extraction (Investigator IDplex Plus Kits). The assays provide a one-stop solution for all your CODIS STR needs.

Investigator® IDplex Plus and IDplex GO! Kits

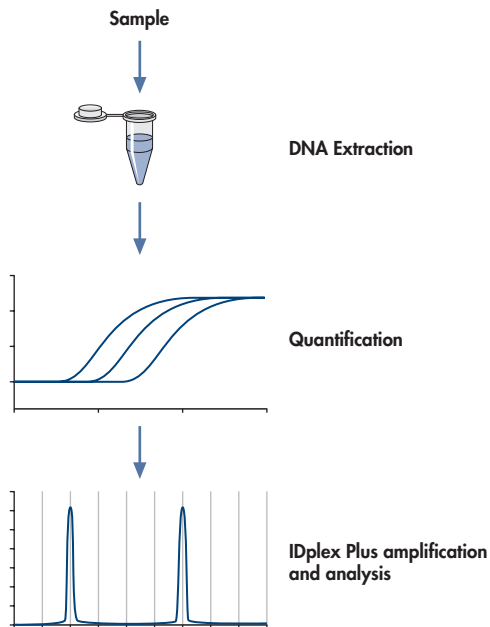
The Investigator IDplex Plus and IDplex GO! Kits amplify the 13 Combined DNA Index System (CODIS) loci along with D2S1338, D19S433, and Amelogenin. Highly sensitive with rapid and reliable results from trace DNA, the Investigator IDplex Plus Kit was developed specifically for forensic stains and blood. The IDplex GO! Kit employs the fast cycling PCR technology and is an ideal choice to obtain rapid, direct amplification from reference samples on FTA® or swabs. Both kits are suitable for forensic applications and paternity testing. Further features include:

- Fast protocols for all CODIS STR applications
- Innovative and extremely inhibitor resistant chemistry for reliable results
- Minimized allelic overlap for unambiguous results
- Validated for forensic use according to SWGDAM and ENFSI guidelines

Figure 1. Allele distribution within the Investigator IDplex Plus and IDplex GO! Kits compared to the AmpFℓSTR® Identifiler® Direct PCR Amplification Kit (Life Technologies). Marker and allele distribution according to the published alleles (Feb. 2013) is shown. The primer design of the Investigator IDplex Kits minimizes allelic overlap to get unambiguous results and increased statistical relevance also for rare alleles. In contrast, the Identifiler Direct Kit has various allelic overlaps which lead to an increased risk of data misinterpretation, the need to retype samples, and as a result increased overall cost at lower statistical relevance.



Casework STR analysis



Typical casework sample workflow. DNA extraction can be performed using QIAGEN's EZ1 (17 minutes). After quantification using the Investigator Quantiplex Kit on the Rotor-Gene Q (48 minutes) STR amplification is carried out using the Investigator IDplex Plus Kit (90 minutes). Subsequently, capillary electrophoresis and data analysis can be performed.

Investigator IDplex Plus Kit for extracted DNA

The kit utilizes QIAGEN's fast-cycling technology, enabling amplification of 16 loci in just **90 minutes**.

- Best performance for difficult samples
- Highest pass rate process and thus cost efficient for the most challenging samples
- Highly flexible DNA input range
- Very high sensitivity, optimized for casework samples

Analyze difficult mixed samples with confidence

Small traces of DNA are important for casework samples. Often, those traces are present as a mixture with other DNA. It is in such situations that the clean baseline and high sensitivity provided by Investigator IDplex Plus can be crucial for your success.

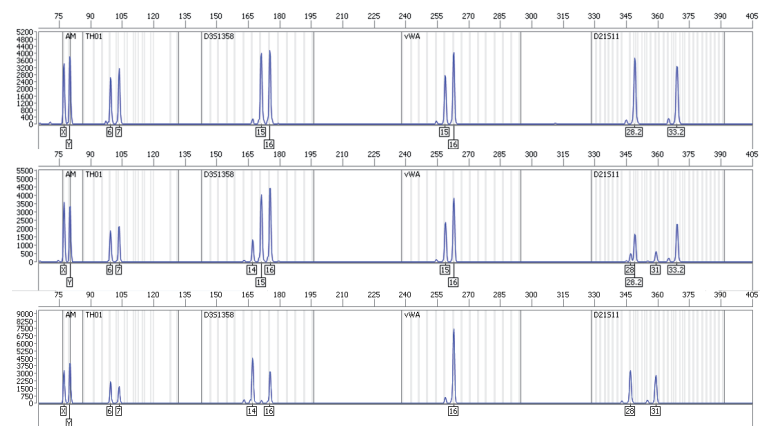


Figure 2. Investigator IDplex Plus Kit allows for the analysis of challenging mixed samples. Control DNA XY13 (top panel, 500 pg DNA input) and Control DNA XY5 (bottom panel, 500 pg DNA input) were mixed and amplified at a ratio of 1:4 (middle panel, total DNA 125 pg XY5 + 375 XY13) using Investigator IDplex Plus Kit. The blue color panels are depicted. Non-overlapping alleles are clearly distinguishable in the mixed sample. A threshold of 50 rfu was used for allele calling.

Get full profiles even with highly inhibited samples

As the Investigator IDplex Plus Kit is extremely inhibitor resistant, the presence of inhibitors is one less problem you need to worry about. The kit has been specifically designed to extract maximum possible information from your important and challenging casework samples.

Investigator IDplex GO! Kits for direct amplification

The kit uses QIAGEN's direct amplification chemistry for amplification of 16 loci from swabs or papers in just **48 minutes**.

- Ideal for reference samples from buccal cells or blood on FTA paper or buccal swabs
- Swab lysis in just 5 minutes
- Validated protocols for Hamilton's easyPunch STARlet System
- Fastest direct amplification workflow in forensics and paternity analysis

Analyze reference samples with confidence directly from FTA or swabs

With a direct amplification kit you can completely change the way you do analysis of reference DNA samples. You can dramatically increase your lab's sample throughput and simultaneously decrease the complexity of your STR analysis processes. This allows you to reduce cost and minimize error sources.

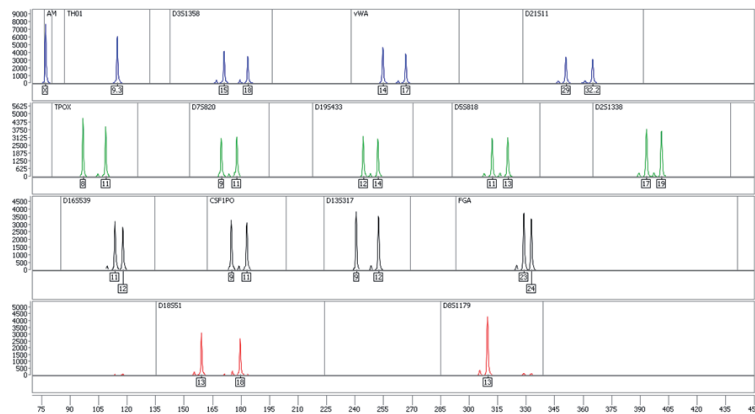
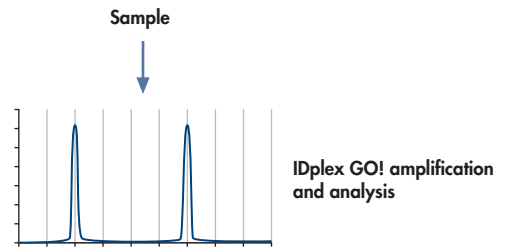


Figure 3. Investigator IDplex GO! Kit allows for reliable direct amplification from FTA paper and swabs. Swab lysate was amplified according to the handbook using the Investigator IDplex GO! Kit.

Don't lose time waiting for your PCR

Reducing PCR time can improve your efficiency. With the Investigator IDplex GO! Kit QIAGEN developed a kit with rapid PCR protocols. However, QIAGEN has now gone a step further. With the innovative Investigator STR GO! Lysis buffer you can reduce the time for swab lysis to 5 minutes without heating, or waiting for the sample to cool afterwards. So don't wait. Just GO!

Reference STR analysis



Typical reference sample workflow. Sample collection on FTA paper is followed by STR amplification (48 minutes) using the Investigator IDplex GO! Kit. Extraction and quantification are not necessary for the Investigator IDplex GO! Kit. Capillary electrophoresis and data analysis can be performed as usual.

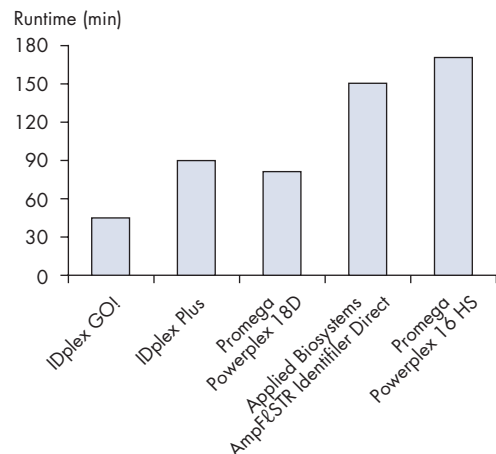


Figure 4. PCR run time comparison. The effective run time is shown for the Investigator IDplex Plus and GO! Kits and products from other suppliers. The PCR was run on an ABI GeneAmp PCR System 9700 Thermal Cycler with Gold-plated Silver block.

Table 1. Technical specifications

	Investigator IDplex GO! Kit	Investigator IDplex Plus Kit
DNA input volume	1.2 mm FTA punch or 2 µl lysate	Up to 15 µl
Volume per reaction	25 µl	25 µl
Matrix	BT5	BT5
Fluorescence dyes	6-FAM, BTG, BTY, BTO	6-FAM, BTG, BTY, BTO
Genetic Analyzers	ABI PRISM 3100/3100 Avant, Applied Biosystems 3130/3130xl, or Applied Biosystems 3500 Genetic Analyzers	ABI PRISM 310, ABI PRISM 3100/3100 Avant, Applied Biosystems 3130/3130xl, or Applied Biosystems 3500 Genetic Analyzers

Table 2. Dyes

Dye	Marker				
6-FAM	Amelogenin	TH01	D3S1358	vWA	D21S11
BTG	TPOX	D7S820	D19S433	D5S818	D2S1338
BTY	D16S539	CSF1PO	D13S317	FGA	
BTR	D18S51	D8S1179			

Ordering Information

Product	Contents	Cat. no.
Investigator IDplex Plus* Kit (100)	Primer mix, Fast Reaction Mix including HotStarTaq Plus DNA Polymerase, Control DNA, allelic ladder IDplex Plus, DNA size standard 550 (BTO), and nuclease free water	381625
Investigator IDplex Plus* Kit (400)	Primer mix, Fast Reaction Mix including HotStarTaq Plus DNA Polymerase, Control DNA, allelic ladder IDplex Plus, DNA size standard 550 (BTO), and nuclease free water	381627
Investigator IDplex GO!* Kit (200)	Primer mix, Fast Reaction Mix including HotStarTaq Plus DNA Polymerase, Control DNA, allelic ladder IDplex GO!, DNA size standard 550 (BTO)	381636
Investigator IDplex GO!* Kit (1000)	Primer mix, Fast Reaction Mix including HotStarTaq Plus DNA Polymerase, Control DNA, allelic ladder IDplex GO!, DNA size standard 550 (BTO)	381638
Investigator STR GO! Lysis Buffer (200)	Lysis buffer for 200 swab samples	386516
Matrix Standard BT5 single cap. (5x25)	Matrix standard 6-FAM, BTG, BTY, BTR, and BTO	386113
Matrix Standard BT5 multi cap. (50)	Matrix standard 6-FAM, BTG, BTY, BTR, and BTO	386125
DNA Size Standard 550 (BTO) (100)	DNA Size Standard 550 (BTO) for 100 reactions	386015

* Not available in all countries.

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.

Learn more at www.qiagen.com/InvestigatorIDKits.

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