

*Simply greater performance
for all your qPCR needs*

> RESULTS

> SENSITIVITY

> SPECIFICITY

> CONFIDENCE

> PERFORMANCE

USB® VeriQuest™ qPCR Master Mixes

Greater sensitivity – Reliable amplification of low expressing targets for accurate expression analysis

- High efficiency PCR across the full dynamic range

Greater specificity – Enzymology expertise for specificity in target amplification and carry-over contamination prevention

- Accurate target quantitation with prevention of non-specific amplification

Greater confidence – Consistent and reproducible results, even from challenging templates

- Robust results on a variety of templates

Greater performance – Optimized formulation for quality data analysis

- Pre-assembled reactions that remain stable for 72 hours at room temperature



USB VeriQuest qPCR Master Mixes

Greater qPCR performance from a trusted source

VeriQuest™ Real-Time qPCR Master Mixes

USB® VeriQuest qPCR Master Mixes are supplied as 2X pre-mixed formulations containing both Passive Reference Dye and Uracil-DNA Glycosylase (UDG) in an optimized buffer for quality results in real-time quantitative PCR (qPCR) assays. The proprietary reaction buffer and the hot start polymerase enhance qPCR amplification by reducing primer-dimer formation and non-template priming, increasing specificity and sensitivity.

USB VeriQuest qPCR Master Mixes provide reproducible, consistent results while maintaining precision and efficiency. Consistency over a broad dynamic template concentration range allows 7 orders of magnitude linear detection for our SYBR Green formulation and 9 orders of magnitude linear detection for probe formulation (Figure 1).

- Single-tube, TaqMan® Probe and SYBR Green master mix formulations available for qPCR
- Exceptional, robust performance even with challenging GC-rich regions (Figure 2)
- Highly stable qPCR master mix can remain at room temperature for 72 hours in a pre-assembled reaction
- Enhanced amplification sensitivity and accuracy of low copy number detection (Figure 3)
- Carry-over contamination prevention with UDG (Figure 4)
- Outstanding reproducibility across 96-wells (Figure 5)
- One-tube master mix — just add template, primers, and water

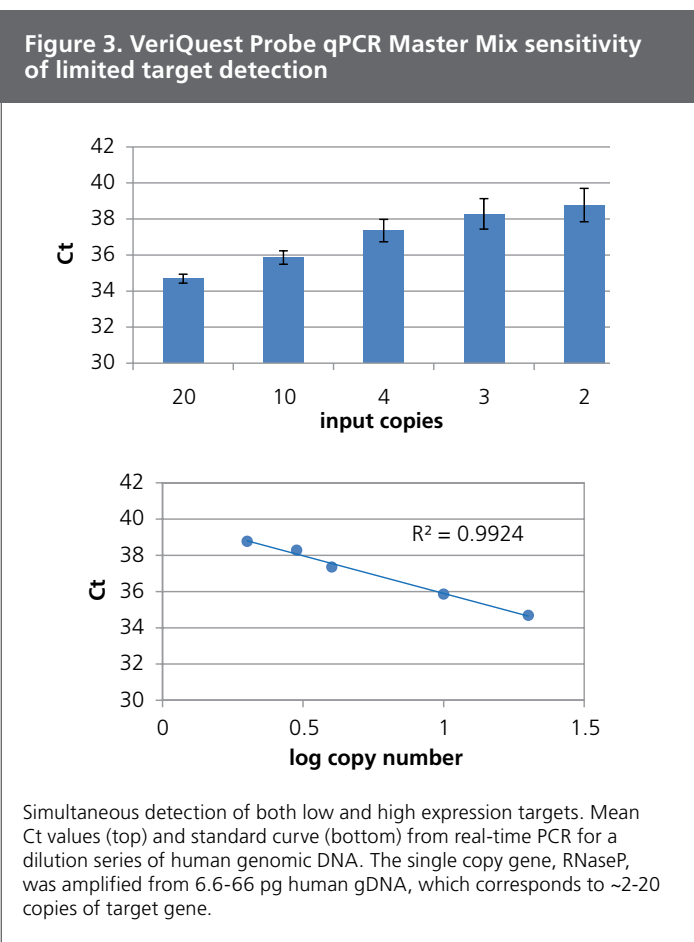
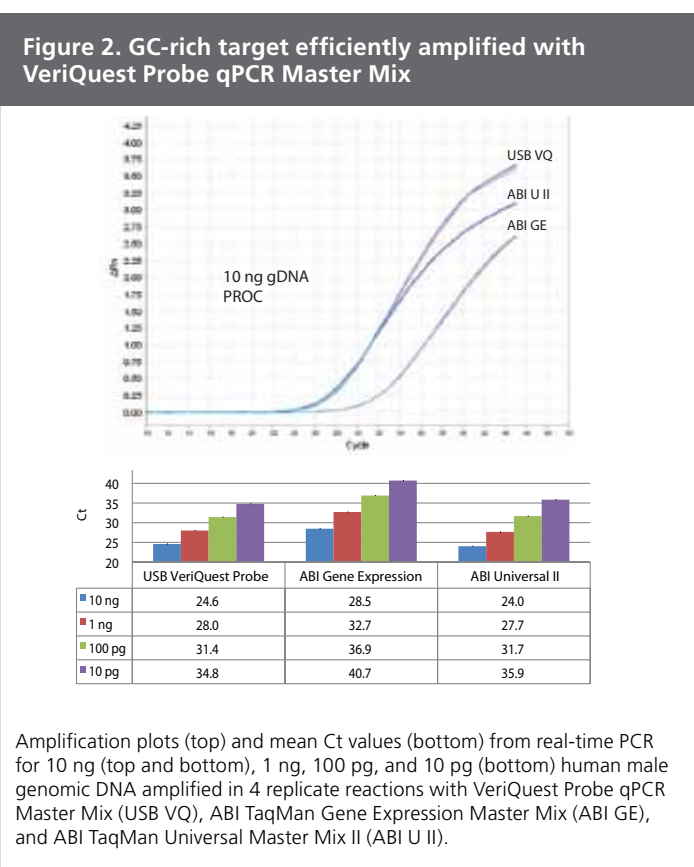
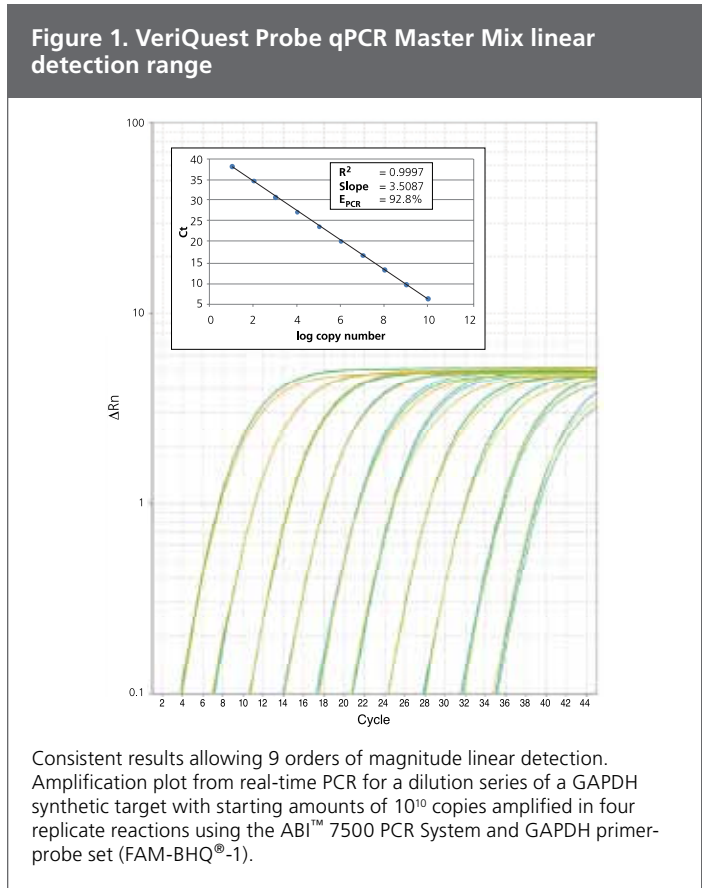
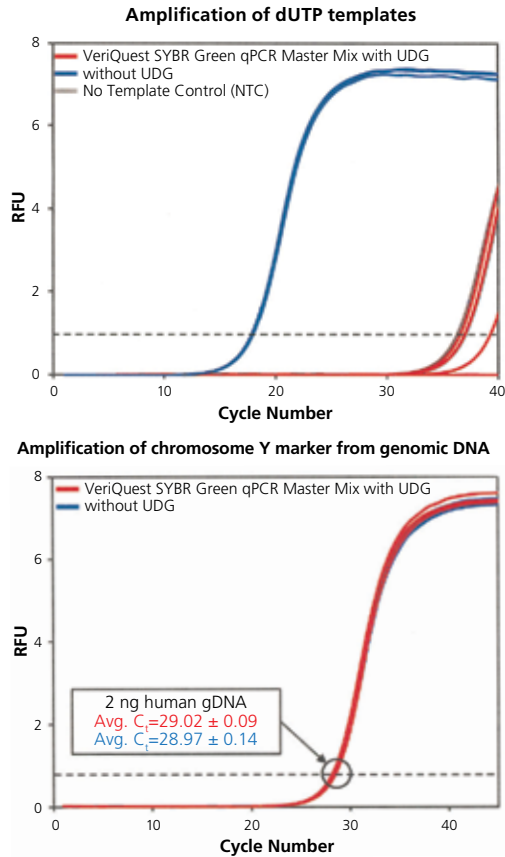
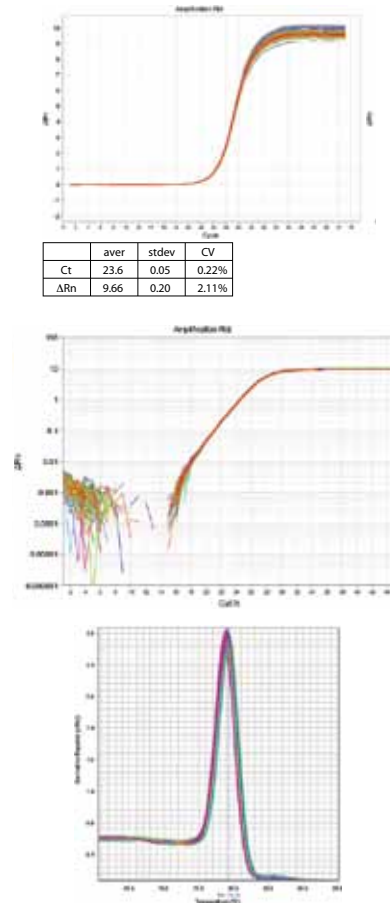


Figure 4. VeriQuest™ SYBR® Green qPCR Master Mix carry-over contamination efficiency



UDG eliminates at least 10⁶ copies of dUTP-containing templates without affecting PCR performance. *E. coli* UDG removal of 10⁶ copies of dUTP-containing GAPDH amplicon (top) and no loss in assay sensitivity from real-time PCR for Chromosome Y genomic marker from 2 of human male genomic DNA (bottom).

Figure 5. VeriQuest SYBR Green qPCR Master Mix delivers exceptional reproducibility across a 96-well plate



Amplification plots and melting curves from real-time PCR of 100 pg of cDNAs reverse-transcribed from HeLa total RNA amplified in 96 replicate reactions with VeriQuest SYBR Green qPCR Master Mix for GAPDH detection.

VeriQuest Standard Mode qPCR Master Mixes – SYBR

Reactions based on 50 µl total volume

VeriQuest SYBR Green qPCR Master Mix (2X)

One-tube master mix for real-time PCR, including SYBR Green, UDG, and ROX™ Passive Reference Dye

75600	40 reactions	1 ml
	200 reactions	5 ml
	400 reactions	2 x 5 ml
	1,000 reactions	5 x 5 ml
	2,000 reactions	10 x 5 ml

VeriQuest SYBR Green qPCR Master Mix with Fluorescein (2X)

One-tube master mix for real-time PCR, including SYBR Green, UDG, and Fluorescein Passive Reference Dye

75665	40 reactions	1 ml
	200 reactions	5 ml
	400 reactions	2 x 5 ml
	1,000 reactions	5 x 5 ml
	2,000 reactions	10 x 5 ml

VeriQuest Standard Mode qPCR Master Mixes – Probe

Reactions based on 50 µl total volume

VeriQuest Probe qPCR Master Mix (2X)

One-tube master mix containing UDG and ROX Passive Reference Dye

75650	40 reactions	1 ml
	200 reactions	5 ml
	400 reactions	2 x 5 ml
	1,000 reactions	5 x 5 ml
	2,000 reactions	10 x 5 ml

VeriQuest Probe qPCR Master Mix, No Reference Dye (2X)

One-tube master mix containing UDG for instruments that do not require a Passive Reference Dye

75660	40 reactions	1 ml
	200 reactions	5 ml
	400 reactions	2 x 5 ml
	1,000 reactions	5 x 5 ml
	2,000 reactions	10 x 5 ml



Revolution driving innovation

The introduction of commercial microarrays by Affymetrix in the mid-1990s revolutionized gene expression analysis by offering previously inconceivable quality and consistency with unmatched depth and breadth of genomic coverage. Simultaneously, real-time quantitative PCR emerged as a complementary technology to identify and measure differential gene expression with the benefits of specificity, sensitivity, and broad dynamic range⁽¹⁾. The joining together in one company, Affymetrix—innovators in gene expression, and USB—quality specialists in enzymology and reagent formulation, led to the introduction of the USB® VeriQuest™ qPCR Master Mixes.

There are many methods available for microarray validation and Affymetrix offers multiple options including VeriQuest qPCR master mixes and branched DNA base QuantiGene® products. While quantitative PCR is a well-accepted method for validating array data as shown in the influential MicroArray Quality Control (MAQC) study⁽²⁾, having a highly specific and sensitive master mix with a wide dynamic range is key for precise quantification and validation. With the benefits of the VeriQuest master mixes, customers can be certain this optimized formulation will meet their microarray validation needs.

With exceptional sensitivity, specificity, and dynamic range, VeriQuest master mixes are useful tools for microarray validation^(2, 3)

- Accurately quantify differences in mRNA expression and genotyping analysis
- Confirm differential gene expression from array analyses
- Measure abundance of DNA or RNA sequences in clinical or industrial samples

VeriQuest real-time PCR master mixes are the fast, easy, familiar, and cost-effective validation solutions

- qPCR is highly sensitive
- Small sample volumes are effective
- Quickly generate validation data with either fast or standard mode cycling
- Familiar technology using readily available laboratory equipment

References

1. VanGuilder, H. D., Vrana, K. E., and Freeman, W. M. (2008) *Biotechniques* **44** (5), 619-626.
 2. MAQC Consortium (2010) *Nature Biotechnology* **28**, 827-838.
 3. Longo, M. C., Berninger, M. S., and Hartley, J. L. (1990) *Gene* **93**, 125-128.
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Simply greater qPCR performance means results you can trust.



SENSITIVITY

For efficient sample quantification of both high and low expressing targets

- Detect as few as two copies of your target
- High efficiency PCR across the full dynamic range
- Optimal performance creates sensitive results



SPECIFICITY

Accurate quantitation of your target without amplification of non-specific primers

- Formulated to prevent non-specific amplification
- Prevent carry-over contamination with UDG
- Enzymology expertise creates specific results



CONFIDENCE

Reproducible and robust results on a variety of templates

- Robust results on challenging templates
- Single tube reduces pipetting errors
- Consistency creates confidence in your results



PERFORMANCE

Optimized master mix formulation for quality data analysis

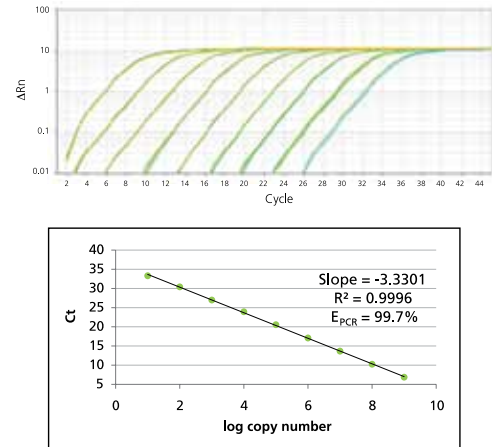
- Pre-assembled reactions stable for 72 hours
 - Reference dyes matched to every instrument
 - Optimal formulation helps your performance
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VeriQuest™ Fast qPCR Master Mixes

USB® VeriQuest Fast qPCR Master Mixes dramatically reduce your run time without sacrificing sensitivity and quality. The master mixes offer higher specificity and sensitivity, virtually eliminating non-specific primer amplification which can negatively affect the efficiency and accuracy of the data (Figure 6). The consistency and specificity afforded by the VeriQuest fast master mixes make them ideally suited for gene expression studies and microarray validation.

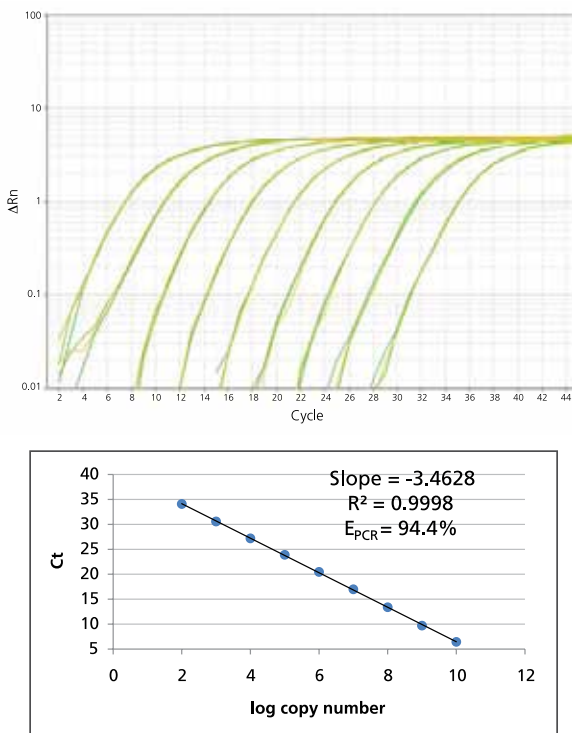
- Optimized for fast mode thermal cycling conditions for results in one-third of the time
- Reproducibility and consistency over a broad dynamic range: 8 orders of magnitude linear detection range (Figures 6 and 7)
- Exceptional, robust performance even with challenging GC-rich regions
- Sensitivity and precision with limited targets (Figure 8)
- Highly stable master mix can remain at room temperature for 72 hours in a pre-assembled reaction
- Contains dUTP and Uracil-DNA Glycosylase (UDG) for carry-over contamination prevention
- Exceptional results with performance comparisons (Figure 9)

Figure 7. VeriQuest Fast SYBR Green qPCR Master Mix linear detection range



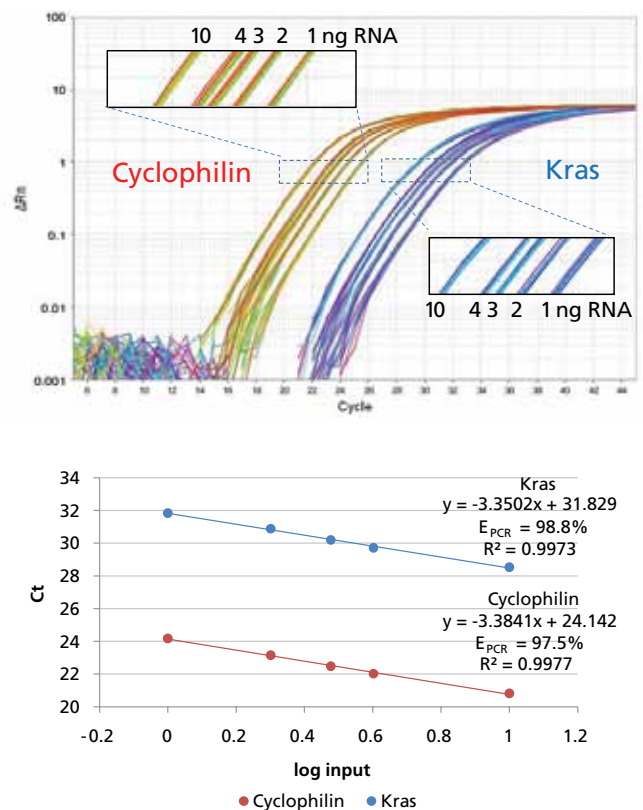
Consistent results allowing 8 orders of magnitude linear detection. Amplification plot and standard curve from real-time PCR for a dilution series of a synthetic target with starting amounts of 10⁹ copies amplified in four replicate reactions using the ABI 7500 Real-Time PCR System and GAPDH primers in fast mode with 5 minutes activation at 95°C.

Figure 6. VeriQuest Fast Probe qPCR Master Mix linear detection range



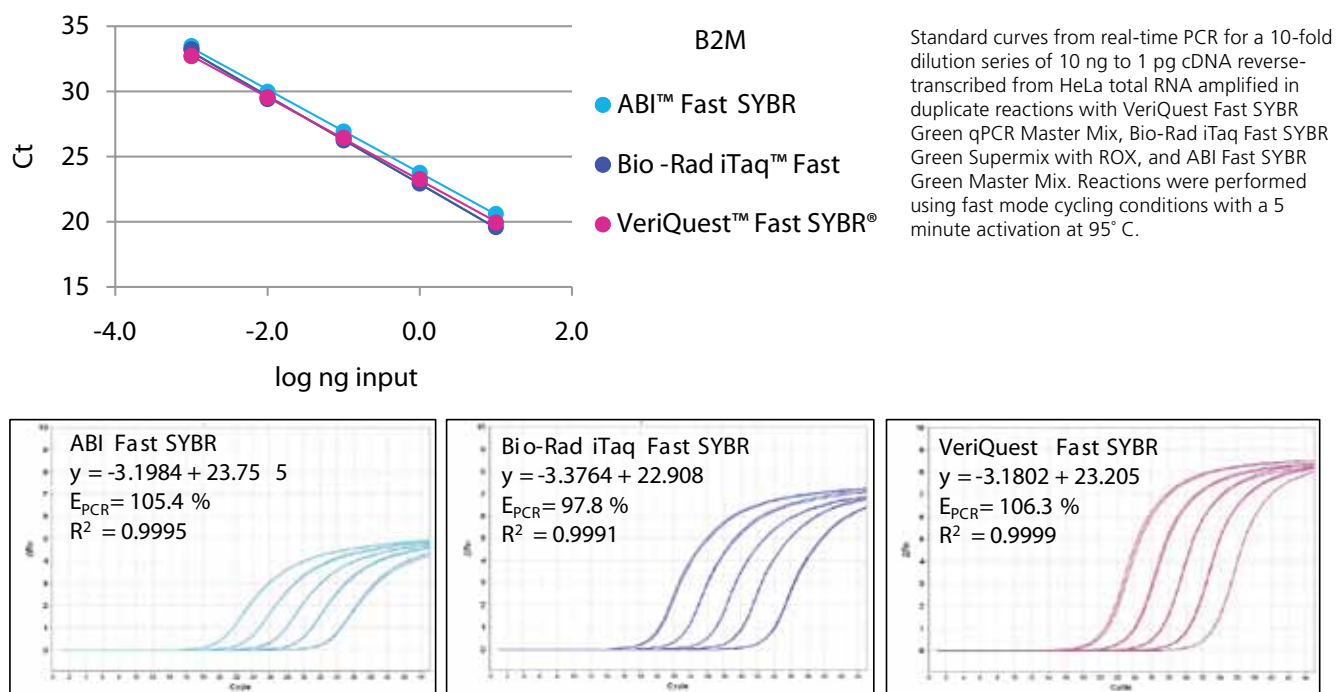
Consistent results allowing 8 orders of magnitude linear detection of VeriQuest Fast Probe qPCR Master Mix. Amplification plot and standard curve from real-time PCR for a dilution series of a synthetic target with starting amounts of 10¹⁰ copies amplified in four replicate reactions using the ABI™ 7500 Real-Time PCR System and GAPDH primers. Reactions were performed using fast mode cycling with 5 minutes activation at 95°C.

Figure 8. High sensitivity and precision in limited target quantification with VeriQuest Fast Probe qPCR master mix



Amplification plot (top) and standard curve (bottom) from real-time PCR for a 1.33 to 10-fold dilution series of 10 ng to 1 ng of cDNAs reverse-transcribed from HeLa total RNA.

Figure 9. Exceptional results with performance comparison



VeriQuest Fast qPCR Master Mixes – SYBR

Reactions based on 20 µl total volume

VeriQuest Fast SYBR Green qPCR Master Mix (2X)

A 2X pre-mixed formulation of SYBR Green qPCR master mix designed for fast mode cycling conditions

75690	100 reactions	1 ml
	500 reactions	5 ml
	1,000 reactions	2 x 5 ml
	2,500 reactions	5 x 5 ml
	5,000 reactions	10 x 5 ml

VeriQuest Fast SYBR Green qPCR Master Mix with Fluorescein (2X)

2X pre-mixed formulation of SYBR Green qPCR master mix with Fluorescein, designed for fast mode cycling conditions

75675	100 reactions	1 ml
	500 reactions	5 ml
	1,000 reactions	2 x 5 ml
	2,500 reactions	5 x 5 ml
	5,000 reactions	10 x 5 ml

VeriQuest Fast qPCR Master Mixes – Probe

Reactions based on 20 µl total volume

VeriQuest Fast Probe qPCR Master Mix (2X)

2X pre-mixed probe-based qPCR master mix containing ROX, designed for fast mode cycling conditions

75680	100 reactions	1 ml
	500 reactions	5 ml
	1,000 reactions	2 x 5 ml
	2,500 reactions	5 x 5 ml
	5,000 reactions	10 x 5 ml

VeriQuest Fast Probe qPCR Master Mix, No Reference Dye (2X)

A 2X pre-mixed formulation of probe-based qPCR master mix containing UDG

75685	100 reactions	1 ml
	500 reactions	5 ml
	1,000 reactions	2 x 5 ml
	2,500 reactions	5 x 5 ml
	5,000 reactions	10 x 5 ml

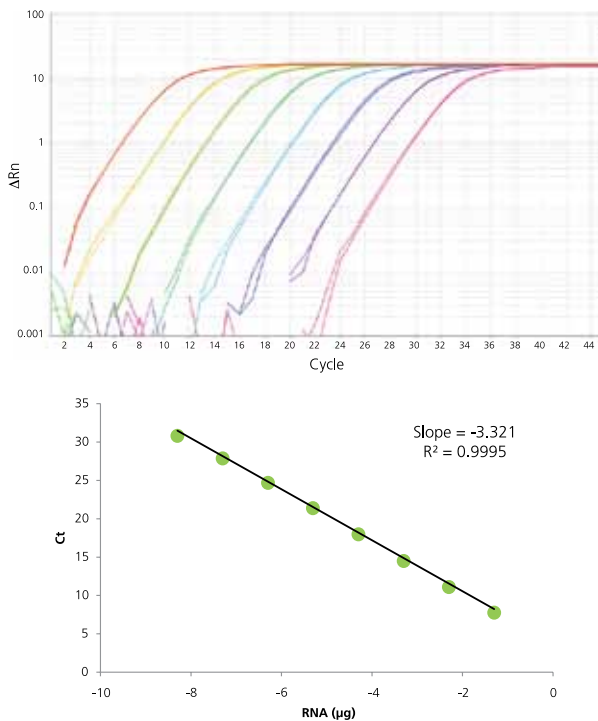
VeriQuest™ One-Step qRT-PCR Master Mixes

USB® VeriQuest One-Step qRT-PCR Master Mixes are ready-to-use master mixes for RNA quantification. The optimized buffer formulation offers specificity, robustness, and reliability for reverse transcription and qPCR detection (Figures 10 and 11). USB VeriQuest One-Step qRT-PCR Master Mixes provide maximum convenience for a real-time, quantitative analysis of RNA templates in a single-reaction format. The RT-PCR process converts and amplifies single-stranded RNA template yielding double-stranded DNA product.

This kit exhibits excellent sensitivity as it can detect fewer than 10 target copies, performs over a broad, linear dynamic range of 7 orders of magnitude (Figures 10 and 11), and is compatible with all real-time PCR instruments.

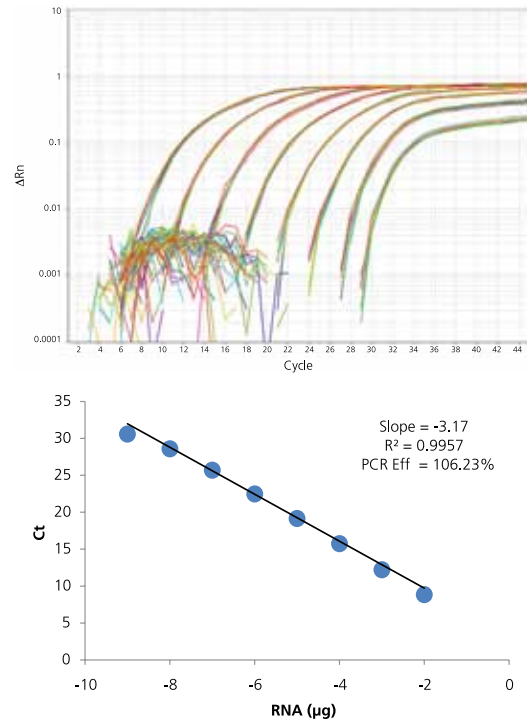
- One-step, sequential reaction format for minimum hands-on time
- Exceptional stability even after 10 freeze-thaw cycles (Figure 12)
- Premium results with product performance comparisons (Figure 13)
- Easily perform analysis of single or multiplex targets from multiple RNA samples (Figure 14)
- Pre-mixed format with VeriQuest qRT-PCR mixes reduces potential contamination
- Multiple platform compatibility with all real-time master mixes

Figure 10. Consistent results over an extremely broad dynamic range with VeriQuest SYBR Green One-Step qRT-PCR Master Mix



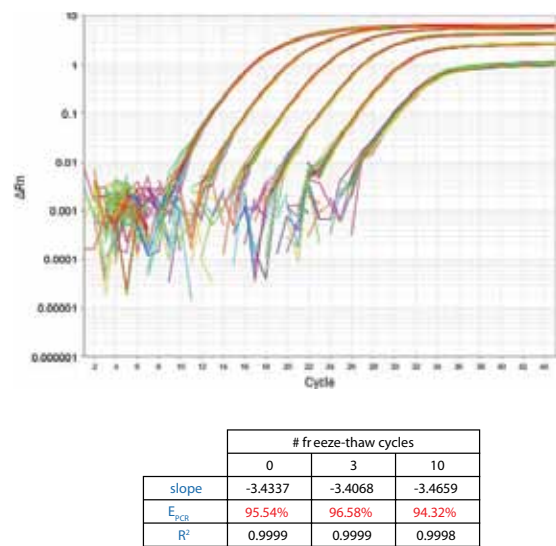
Linear detection range of VeriQuest SYBR Green One-Step qRT-PCR Master Mix. RNA from human muscle cells was reverse transcribed and amplified using 18S primers. Triplicate reactions were run on an ABI™ 7500 Real-Time PCR System.

Figure 11. Consistent results over an extremely broad dynamic range with VeriQuest Probe One-Step qRT-PCR Master Mix



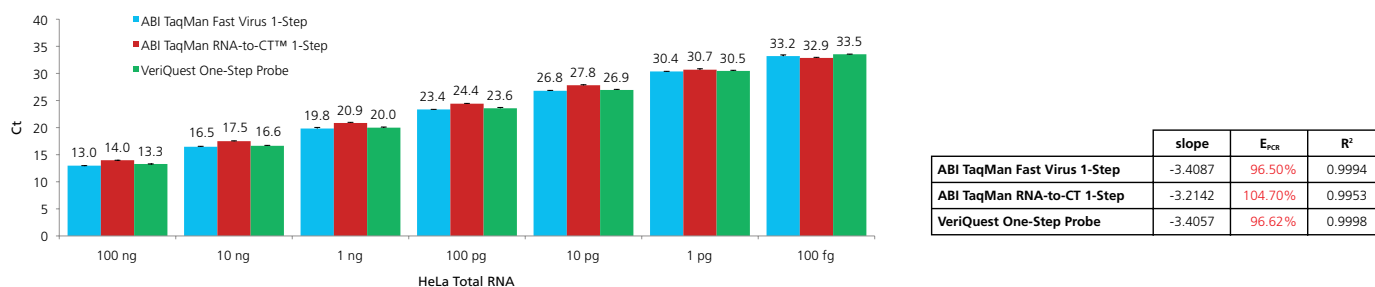
Linear detection range of VeriQuest Probe One-Step qRT-PCR Master Mix. RNA from human muscle cells was reverse transcribed and amplified using 18S primers. Triplicate reactions were run on an ABI 7500 Real-Time PCR System.

Figure 12. Freeze-thaw stability with VeriQuest Probe One-Step qRT-PCR Master Mix



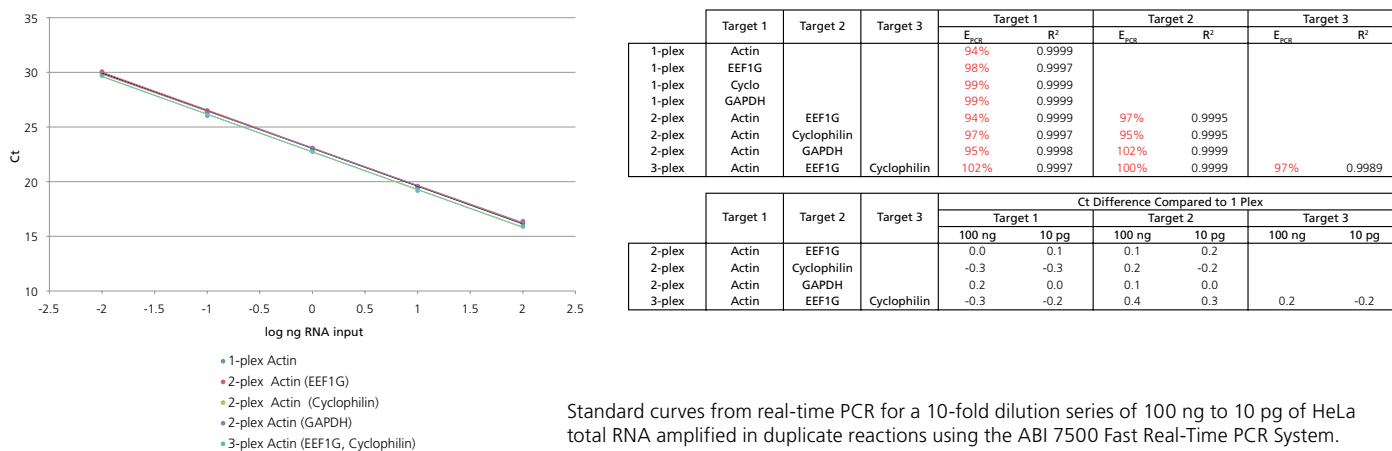
No loss in performance after 10 freeze-thaw cycles. Amplification plot from real-time PCR for a 10-fold dilution series of 100 ng HeLa total RNA. The master mix was subjected to 0, 3, and 10 freeze-thaw cycles.

Figure 13. Exceptional results with performance comparisons



Product comparison - VeriQuest Probe One-Step qRT-PCR Master Mix. Ct values, R², and PCR efficiency from real-time PCR for a 10-fold dilution series of 100 ng to 100 fg HeLa total RNA amplified in duplicate reactions with VeriQuest Probe One-Step qRT-PCR Master Mix, ABI™ TaqMan® Fast Virus 1-Step Master Mix, and ABI TaqMan RNA-to-CT™ 1-Step Kit using the ABI 7500 Fast Real-Time PCR System and GAPDH primers and probe (Fam-BHQ®) in standard mode with 15 minute RT reaction at 50°C.

Figure 14. Consistent results with single, duplex, or triplex target detection with VeriQuest™ Probe qRT-PCR Master Mix



Standard curves from real-time PCR for a 10-fold dilution series of 100 ng to 10 pg of HeLa total RNA amplified in duplicate reactions using the ABI 7500 Fast Real-Time PCR System. Actin Vic-MGB, Cyclophilin Cy3-BHQ-1 probe, and EEF1G Fam-BHQ-1 probe were used.

VeriQuest Real-Time Reverse Transcription Master Mixes – SYBR

Reactions based on 50 µl total volume

VeriQuest SYBR Green One-Step qRT-PCR Master Mix (2X)

One-step qRT-PCR master mix that includes SYBR Green and ROX Passive Reference Dye for use on all instrument platforms that utilize ROX™

75705	40 reactions	1 ml
	200 reactions	5 ml

VeriQuest SYBR Green One-Step qRT-PCR Master Mix with Fluorescein (2X)

One-step qRT-PCR master mix that includes SYBR Green and Fluorescein Passive Reference Dye for use on all instrument platforms that utilize fluorescein

75715	40 reactions	1 ml
	200 reactions	5 ml

VeriQuest Real-Time Reverse Transcription Master Mixes – Probe

Reactions based on 50 µl total volume

VeriQuest Probe One-Step qRT-PCR Master Mix (2X)

One-tube, one-step qRT-PCR master mix that includes ROX Passive Reference Dye for use on all instrument platforms that utilize ROX

75700	40 reactions	1 ml
	200 reactions	5 ml

VeriQuest Probe One-Step qRT-PCR Master Mix, No Reference Dye (2X)

One-tube, one-step qRT-PCR master mix for RNA quantitation without a passive reference dye for use on all instrument platforms that do not require reference dye

75710	40 reactions	1 ml
	200 reactions	5 ml

Related products

PCR tools

ExoSAP-IT® PCR Product Cleanup

78250	20 reactions
78200	100 reactions
78201	500 reactions
78202	2,000 reactions
78205	5,000 reactions

HT ExoSAP-IT High-Throughput PCR Product Cleanup

78395	480 reactions x 8-tube strip 5,760 reactions x 1 plate (12 x 8-tube strips) 23,040 reactions - 4 plates 1,000 reactions (2 ml) 5,000 reactions (10 ml)
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PrepEase® DNA Cleanup Kit

78758	50 preps
78759	250 preps

PrepEase PCR Purification 96-well Plates (Ultrafiltration)

78761	10 x 96-well plates
78762	50 x 96-well plates

First-Strand cDNA Synthesis Kit for Real-Time PCR

75780	50 reactions
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VeriQuest™ Taq DNA Polymerase

71170	50 units
	250 units
	1,000 units
	5,000 units

Water, Nuclease-Free

71786	10 x 1 ml
	100 ml
	500 ml
	1 L
	5 L

DNA isolation and purification

Chromatin Immunoprecipitation (ChIP) Assay Kit

78460	25 ChIP Assays
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PrepEase Genomic DNA Isolation Kit

78850	50 preps
78855	250 preps

PrepEase MiniSpin Plasmid Kit

78737	250 preps
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PrepEase Plasmid 96-well Plate Kit

78751	4 x 96-well plates
78752	24 x 96-well plates

PrepEase BAC Purification Kit

78722	10 preps
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PrepEase Yeast Plasmid Isolation Kit

79220	50 preps
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RNA isolation and purification

PrepEase RNA Spin Kit

78766	50 preps
78767	250 preps

PrepEase mRNA MiniSpin Kit

78878	12 preps
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PrepEase RNA/Protein Spin Kit

78871	50 preps
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