QUANTITATIVE PCR

Brilliant® II QPCR and QRT-PCR Reagents

The Next Generation of QPCR Reagents

+ Improved sensitivity and flexibility
+ Earlier Ct detection at high and low target concentrations
+ Increased SYBR® Green fluorescence with shorter run times

OUR NEXT GENERATION BRILLIANT II® QPCR AND QRT-PCR MASTER MIX KITS OFFER SUPERIOR SENSITIVITY FOR IMPROVED QUANTIFICATION AND REPRODUCIBILITY.

Our new Brilliant® II QPCR and QRT-PCR reagents[a,b,c] were developed to maintain the high quality of our original Brilliant product line, but with a significant improvement in sensitivity of detection, ensuring reproducible quantification even at low target concentrations. When compared to other QPCR reagents on the market, we observe earlier threshold cycle (Ct) detection at high and low template concentrations as well as improved reaction efficiency across the entire range of template concentrations. Earlier Ct detection and higher efficiency of amplification ensure greater reproducibility within an assay and across multiple assays and different templates.

The Brilliant II QPCR and QRT-PCR reagents have been developed, tested, and validated on our Mx3000P® and Mx3005P® QPCR Systems. By working with both our Mx™ QPCR systems and our new Brilliant II QPCR reagents, you will benefit from utilizing a fully integrated system optimized to function at peak performance.

Improved Sensitivity of Detection

The new Brilliant II QPCR and QRT-PCR master mix reagents are designed to provide you with improved sensitivity when compared with other commercially available QPCR reagents. In Figure 1, our new Brilliant II SYBR Green QPCR master mix outperforms four other competitor SYBR Green based master mixes. The improved sensitivity using the Brilliant II reagents is evident with earlier Ct detection of 1-3 cycles at each template concentration, improved replicate reproducibility, and higher amplification efficiency across four orders of magnitude.

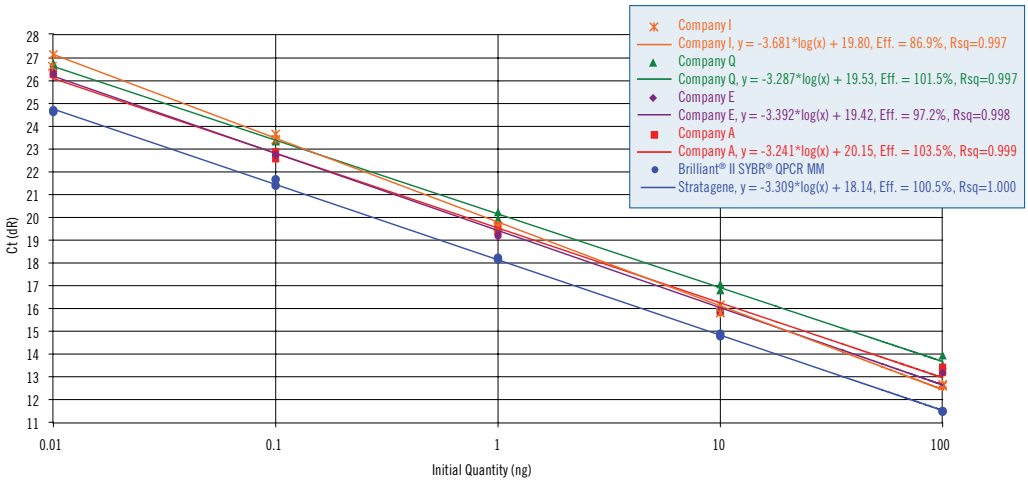

Figure 1
Brilliant® II SYBR® Green QPCR Master Mix Delivers Better Sensitivity and Reproducibility over a Wide Range of Concentration
Standard curve plot of 10-fold dilutions detecting a GAPDH target (150bp, 52% G/C) from 100 ng down to 0.01 ng of cDNA. The Brilliant® II SYBR® Green QPCR Master Mix detects template at ~1-3 Ct's earlier than competitor reagents and with perfect efficiency and Rsq values.

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In Figure 2, we illustrate the improved replicate reproducibility of Brilliant II SYBR Green 1-Step QRT-PCR master mix compared to three competitor reagents. The earlier Ct detection and improved replicate reproducibility leads to more accurate quantification of starting material.

Another measure of sensitivity is the ability to reproducibly distinguish small differences in template concentrations. One of the most challenging assays in QPCR is detecting 2-fold differences in samples at very low copy number (or concentration). Our Brilliant II QPCR reagents are capable of quantifying 2-fold differences (equal to 1 cycle or 1 Ct difference) in samples below 10 copies of template (Figure 3). In this example, we quantify the difference between 2.5 copies and 5 copies of target and illustrate 95% amplification efficiency with consistent detection of 2-fold differences at each concentration.

Brighter, Faster SYBR Green QPCR

Our new Brilliant II SYBR Green QPCR master mix exhibits earlier Ct detection with over twice the fluorescence intensity compared to our original Brilliant SYBR Green product and higher fluorescence than many competitor reagents. We also optimized cycling conditions for more rapid run times of 2 hours total (over a 45 minute reduction in overall run time) with increased performance compared to competitor's recommended longer duration cycling conditions.

More Efficient QRT-PCR

An additional upgrade in our Brilliant II QRT-PCR reagents is the use of new reverse transcription (RT) enzymes specifically formulated for improved performance in one- and two-step formats.

The Brilliant II QRT-PCR one-step reagents use a Moloney-based RT specifically formulated for the Brilliant II 1-step kit with optimal performance at a synthesis temperature of 50°C.

The Brilliant II QRT-PCR two-step reagents include our new AffinityScript™ Multiple Temperature Reverse Transcriptase[d]. The AffinityScript RT contributes to improved sensitivity, but is also designed for greater flexibility to generate high cDNA yields at synthesis temperatures of 42-55°C.

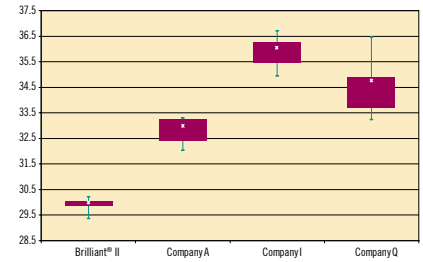

Figure 2
Improved Reproducibility with Brilliant® II Reagents
Box and Whisker chart illustrating the Ct variation of Brilliant® II reagents and three other commercially available kits. SYBR® Green I dye was used for detection of ARF target (131 bp, 54% G/C) gene across 8 replicates at 20 pg of total RNA. The Brilliant® II SYBR® Green QRT-PCR 1-Step Master Mix has min-max delta Ct of 0.85 cycles compared to delta Ct values of 1.2-3.2 (max delta Ct is nearly a 10x fold variation) for competitor reagents.

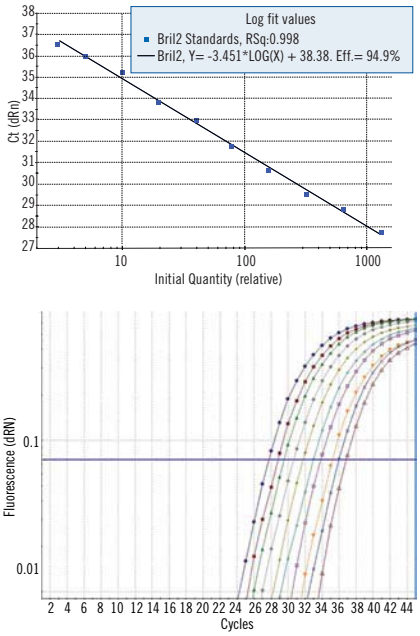

Figure 3
Superior Sensitivity and Precision to Detect Target Across 2-Fold Dilutions
Amplification plot (semi-log) and standard curve of 2-fold dilutions of linearized plasmid detected with a linear hydrolysis probe. Brilliant® II QPCR reagents exhibit precise detection of 2-fold differences from 1,280 copies down to ~2.5 copies. The average delta Ct across all 10 concentrations is one cycle and the standard curve efficiency equals 95%.

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Brilliant® II QPCR and QRT-PCR Reagents and Related Products

Probe-Based Master Mixes		
Brilliant® II QPCR Master Mix	400 rxn	600804
	10 x 400 rxn	600815
Brilliant® II QRT-PCR 1-Step Master Mix	400 rxn	600809
	10 x 400 rxn	600818
Brilliant® II QRT-PCR AffinityScript™ 2-Step Master Mix	400 rxn	600827
SYBR® Green Master Mixes		
Brilliant® II SYBR® Green QPCR Master Mix	400 rxn	600828
	10 x 400 rxn	600831
Brilliant® II SYBR® Green QRT-PCR 1-Step Master Mix	400 rxn	600825
	10 x 400 rxn	600826
Brilliant® II SYBR® Green QRT-PCR AffinityScript™ 2-Step Master Mix	400 rxn	600834
Probe-Based Core Kits		
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	10 x 400 rxn	600819
cDNA Synthesis for QPCR		
AffinityScript™ QPCR cDNA Synthesis Kit	400 rxn	600559

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