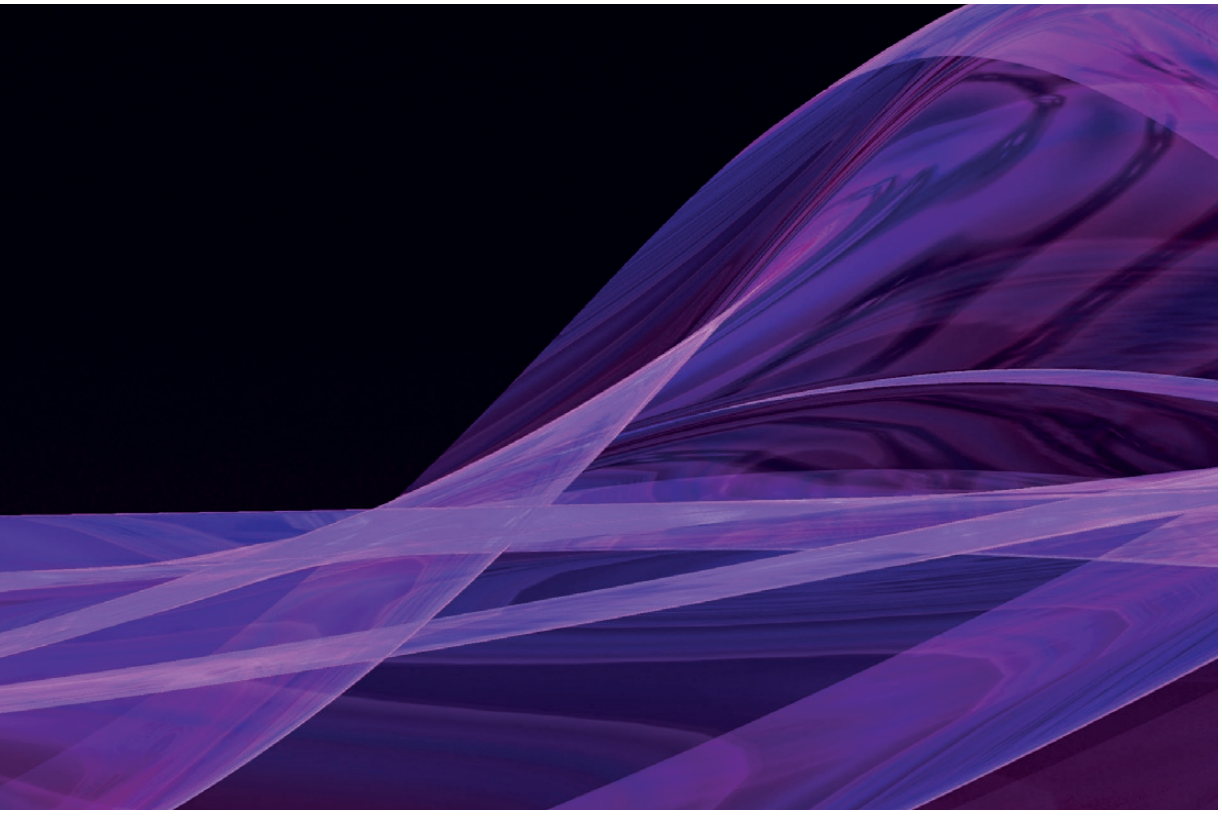
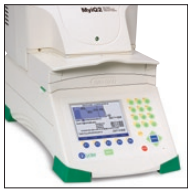




MyiQ™2 Two-Color
Real-Time PCR Detection System

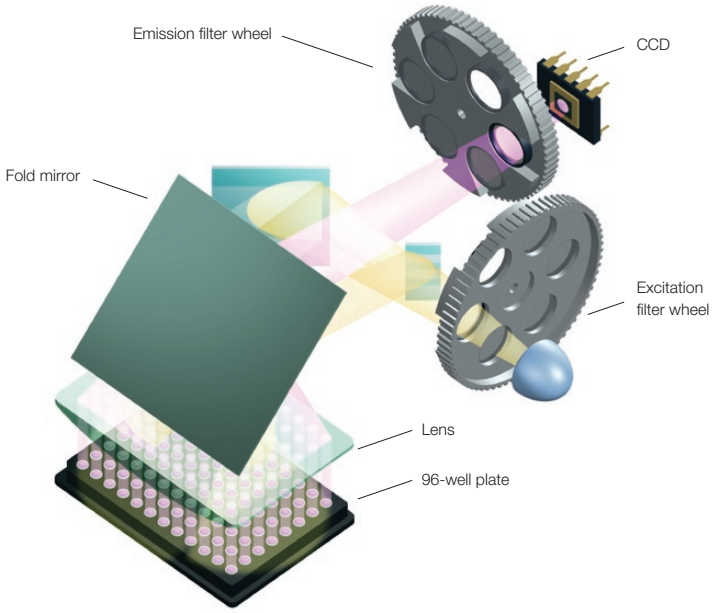
BIO-RAD

MyiQ2 Two-Color
Real-Time PCR Detection System

The MyiQ2 system offers two-target analysis capabilities for multiplex PCR and routine detection of single fluorophore experiments using SYBR® Green I or other green fluorescent dyes. The MyiQ2 system is the latest extension of the reliable and popular line of real-time PCR detection instruments built on the quality gradient-enabled iCycler® thermal cycler.

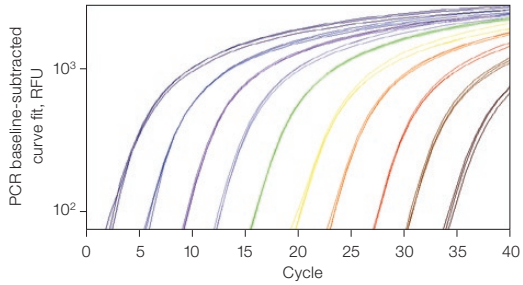
Optical Design for Accurate Signal Detection

The MyiQ2 optical design enables highly specific excitation and detection of fluorophores. All 96 wells are simultaneously excited using narrow bandpass filters and a tungsten-halogen lamp. Emitted fluorescent light passes through an emission filter and is detected by a sensitive 12-bit charge-coupled device (CCD).



Linear Detection for Repeatable Results

Sensitive CCD-based optics enable accurate quantitation over a dynamic range of nine orders of magnitude with excellent linearity.

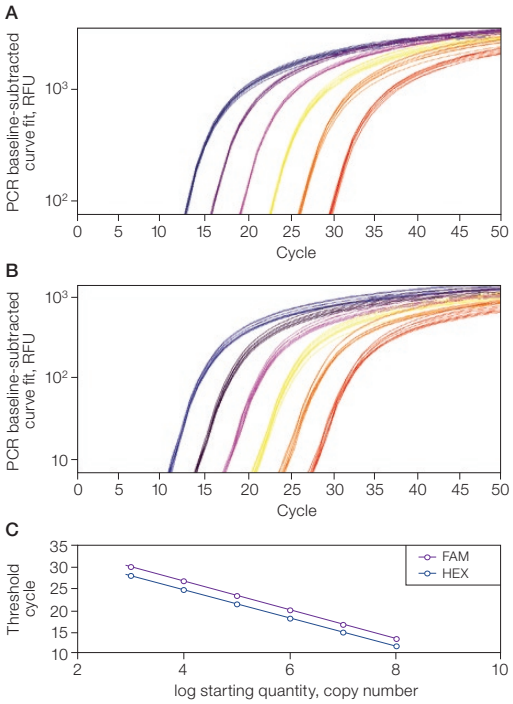


Superb linearity over a wide dynamic range of template starting concentrations. A tenfold serial dilution of plasmid DNA was amplified using iQ™ supermix with primers and a FAM-labeled probe specific to the β-actin gene. Triplicates of each template concentration were monitored with the MyiQ2 system. Standard curve had $R^2 = 0.999$, efficiency = 93.3%. RFU, relative fluorescence units.

Two-Target Multiplexing

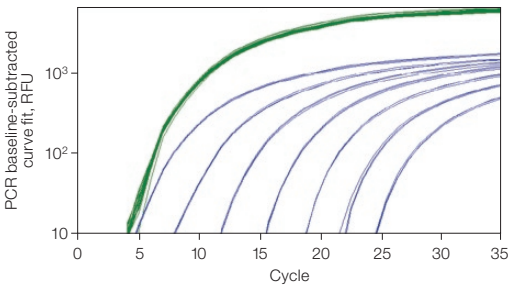
Accurate Multiplexing for Your Most Challenging Experiments

The optical design of the MyiQ2 system provides flexibility in fluorophore selection for a robust simplex or duplex experiment.



Two-target multiplexing capabilities. Data from a tenfold serial dilution of template (10^8–10^3 copies) were monitored with the MyiQ2 system. **A**, FAM-labeled probe specific to β-actin; **B**, HEX-labeled probe specific to *GAPDH*; **C**, FAM standard curve: efficiency = 99.2%, $R^2 = 0.999$; HEX standard curve: efficiency = 101.1%, $R^2 = 0.999$. RFU, relative fluorescence units.

Even in challenging experimental designs where one target is expressed at significantly higher concentrations than the other, the MyiQ2 optical design delivers accurate detection.

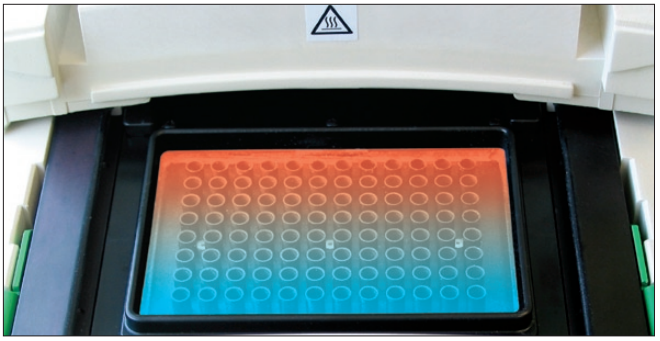


Accurate detection in multiplex experiments. Data from a serial dilution of plasmid target #1 (10^8–10^2 copies) and target #2 (maintained at 10^8 copies) were monitored with the MyiQ2 system. (■), FAM-labeled hydrolysis probe for β-actin; (■), Cal Fluor Gold 540–labeled hydrolysis probe for *GAPDH*. RFU, relative fluorescence units.

Fast Assay Optimization Using the Thermal Gradient

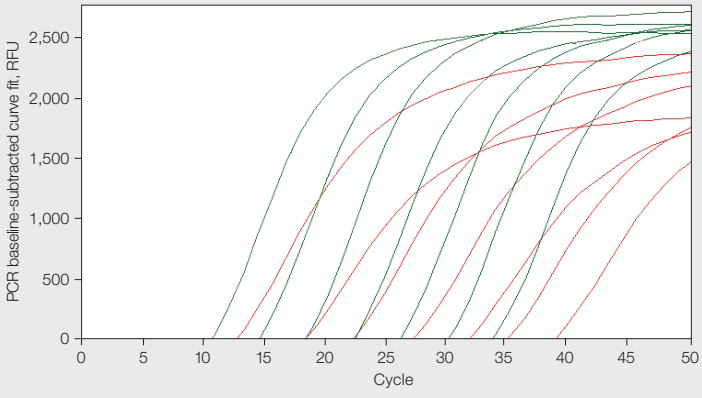
The MyiQ2 thermal gradient feature allows you to optimize assays in a single experiment, minimizing the use of precious samples and reagents and saving valuable research time. At any step in a protocol, a temperature gradient of up to 25°C may be programmed across the reaction block. Dynamic ramping ensures each sample reaches its set temperature at the same time, so that the incubation period is consistent across all samples.

- Exceptional uniformity and reproducibility within each temperature zone
- Easy programming with onscreen presentation of gradient temperatures
- Each temperature within the thermal gradient is listed in validation reports



Optimize Reactions in a Single Experiment

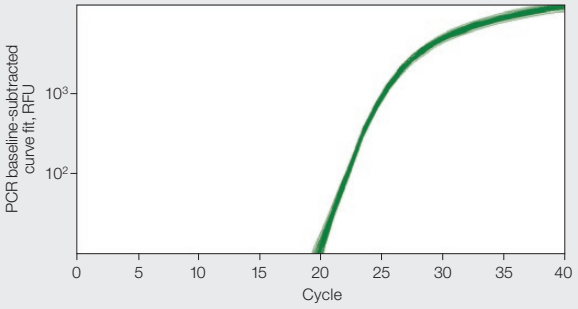
Optimizing incubation temperatures for real-time PCR assays is critical, particularly for multiplex assays, but it is not always easy to do. After the melting temperature (T_m) of a primer is calculated, the annealing temperature must be empirically determined for optimal results. This often involves repeating a reaction at many different temperatures. Similar time-consuming tests may be required to optimize the denaturation temperature. The thermal gradient feature facilitates identification of the most favorable temperatures for optimal assay performance.



Determination of optimal annealing temperature. A tenfold dilution series (10^8–10^2 copies) of plasmid containing *GAPDH* template was amplified using a thermal gradient in the presence of SYBR® Green I dye. Eight identical reactions were prepared for each template concentration, one for each of the eight PCR annealing temperatures, ranging from 55 to 70°C. An optimal primer annealing temperature of 58°C (shown in the green traces), which resulted in the earliest threshold cycle (C_T) or quantification cycle (Cq) value, was identified in this gradient assay. The red traces show the results for 64.5°C, a suboptimal temperature, as a comparison. RFU, relative fluorescence units.

Uniform Block Performance

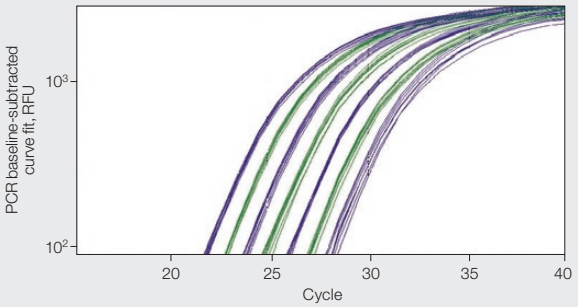
The iCycler 96-well block of the MyiQ2 system offers excellent thermal performance and uniformity across the entire block. Precise thermal control results in reliable, repeatable experimental data and conclusions.



Excellent uniformity across the reaction block. FAM hydrolysis probe (25 µl) detection of 5 ng IL-1β genomic DNA. C_T (Cq) value = 21.77, SD = 0.060. RFU, relative fluorescence units.

Superior Resolution

Accurate discrimination of different template concentrations is crucial for accurate analysis.



Superior resolution for accurate relative or absolute quantification. A twofold dilution series of IL-1β genomic DNA was detected using SYBR® Green. RFU, relative fluorescence units.

Efficient, Accurate, Easy-to-Use Software

The iQ™5 optical system software, version 2.1 has advanced features for streamlined gene expression analysis, quantitative assays with multiple standard curves, and other qualitative assays, including allelic discrimination and screening for known mutations. Making the most of a powerful real-time PCR system requires a flexible and easy-to-use software package. The iQ5 optical system software meets this need with quick setup, a full suite of analysis tools, and a variety of presentation options. Version 2.1 of the iQ5 software is used to control, and supports the collection and analysis of real-time PCR data from, the MyiQ2 system.

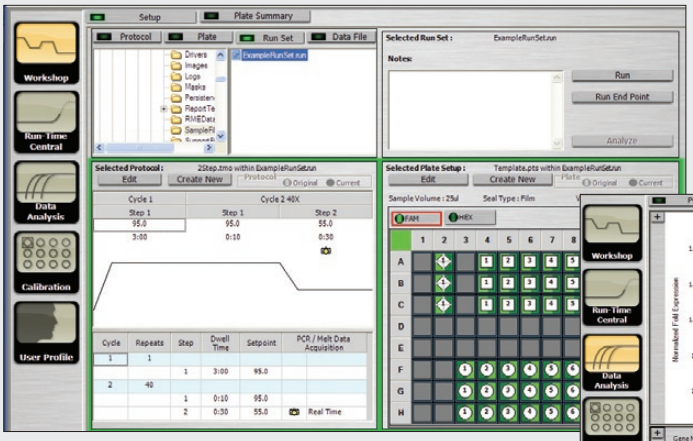
Features include:

- Streamlined plate and protocol setup, including Run Set functionality, enables linking of commonly used plate and protocol files, speeding up the process of run initiation and getting you to results faster
- Inter-run calibration to confidently compare results from multiple plates
- Multiple data reporting options to generate publication-quality statistics and graphs, quickly create customizable reports, or export data from tables with 1-step Export to Excel
- User preference settings for managing data files, analysis settings, and access privileges

Intuitive Navigation

The iQ5 optical system software lets you:

- Easily navigate and select software functionality using the vertical and horizontal tabs
- Quickly select your desired protocol and plate or Run Set files using the intuitive tree file selection structure and visual summary of the plate and protocol file contents
- Rapidly run, edit, or create new protocols and plate setups using the functions that are easily accessible from the Workshop screen
- Edit the plate setup for sample, condition, and gene names before or after a run as required

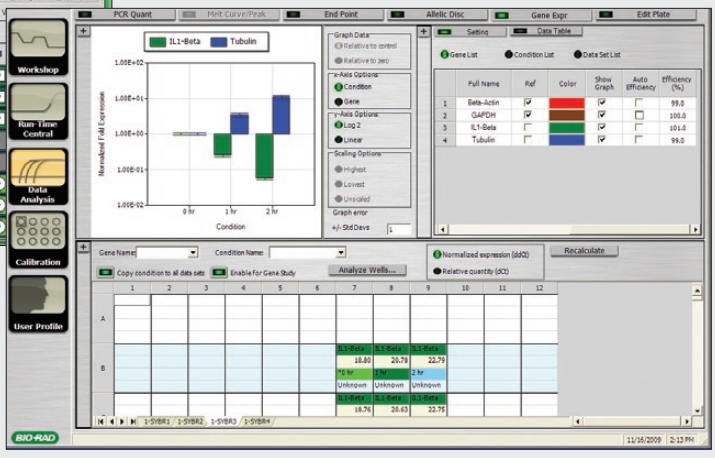


Workshop screen. Start a run and obtain results faster using the Run Set function, which links commonly used plate and protocol files. Simply choose your Run Set file and click Run.

Advanced Gene Expression Analysis

Sophisticated analysis tools for researchers examining gene expression, including:

- Advanced gene expression analysis by relative quantity (ΔC_T) or normalized expression ($\Delta\Delta C_T$), accounting for differences in reaction efficiency or use of multiple reference genes
- Gene Study feature to combine and compare gene expression results from up to 5,000 C_T data points and multiple plates



Gene Expression analysis tab. Auto-calculated or editable efficiency value entry uses friendly multiple reference gene calculations.

Optimized Reagents for Peak Performance

Bio-Rad reagents accentuate the performance of your real-time system. All reagents demonstrate high performance with minimal optimization over a wide dynamic range for input RNA, cDNA, genomic DNA, and plasmid DNA.

Detect Multiple Targets without Optimization

SsoFast™ probes supermix is a member of Bio-Rad's next-generation family of real-time PCR supermixes that uses patented* Sso7d fusion protein technology. The combination of Sso7d fusion protein technology and an optimized formulation helps perform fast duplex qPCR, while maintaining a broad dynamic range, reliability, and accurate quantification for robust gene expression analysis.

SsoFast™ EvaGreen® supermix also utilizes patented** Sso7d fusion protein technology. This supermix contains EvaGreen, a fluorophore that has minimal inhibition of PCR, ensuring maximum efficiency, sensitivity, and reproducibility, while providing higher fluorescence compared to SYBR® Green.

For SYBR® Green experiments Bio-Rad offers the iQ™ SYBR® Green supermix, which is formulated for optimal results. It contains SYBR® Green I dye, iTaq™ DNA polymerase, optimized buffer, and dNTPs qualified for quantitative PCR.

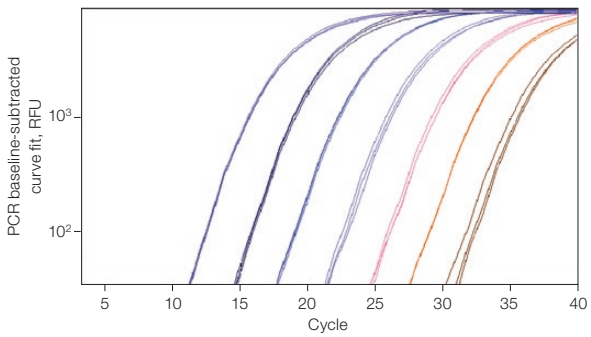
Convenient One-Step RT-qPCR for Any Detection Chemistry

iScript™ one-step RT-PCR kits are optimized to deliver maximum RT-PCR efficiency, sensitivity, and specificity. These kits contain a proprietary reaction buffer that has been specifically formulated to optimize activity of both iScript reverse transcriptase and iTaq DNA polymerase, while minimizing the potential for primer-dimer formation and other nonspecific PCR artifacts. With these kits, clean detection of low-copy targets is easy to achieve.

Protect Precious Samples with High-Quality Plastic Consumables

Bio-Rad offers high-quality consumables for a wide variety of applications, backed by technical support professionals. Each box of Bio-Rad tubes, plates, and caps is process sampled and tested to be negative for DNase, RNase, and DNA. All reaction vessels and sealing systems have been designed to provide the best possible fit and performance with a corresponding Bio-Rad thermal cycler. For real-time PCR applications, Bio-Rad offers precisely manufactured tubes, plates, sealers, and accessories that have been tested for optimal performance in the MyiQ2 system.

* U.S. patents 6,627,424 and 7,541,170.
** U.S. patents 6,627,424; 7,541,170; and 7,560,260.



SsoFast EvaGreen supermix exhibits high specificity over a broad dynamic range. Serial dilutions of DNA template (10^8 to 10^2 copies) were monitored with the MyiQ2 system. Efficiency = 103%, R^2 = 0.999, slope = –3.24. RFU, relative fluorescence units.

Have Confidence in Your Entire Genomics Workflow

Bio-Rad offers a complete suite of research tools for your experiments that utilize real-time PCR detection. Producing accurate, reproducible results is reliant on each preceding step in the workflow as documented in the Minimum Information for Publication of Quantitative Real-Time PCR Experiments (MIQE) guidelines (Bustin et al. 2009). Appropriate selection of methods and analyses results in robust, repeatable data and conclusions. Bio-Rad's suite of genomics research tools can help you achieve this goal.

Assay Design

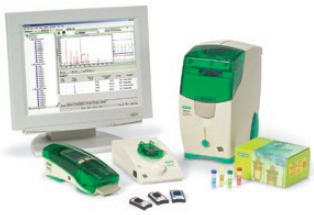
Beacon Designer software facilitates the design and selection of robust and specific primers and probes for rapid generation of optimized results for a variety of real-time PCR applications.

Sample Preparation

Aurum™ RNA isolation kits yield fast results with the highest level of sample purity.

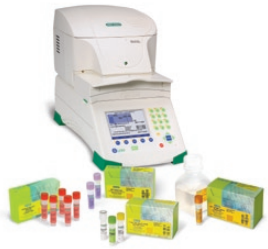
Sample Quality Assessment

The Experion™ automated electrophoresis system quickly and accurately measures RNA quality and quantity, an essential step for reproducible downstream results.



Real-Time Amplification and Analysis

A broad variety of real-time PCR reagents and instruments, such as the MyiQ2 system, provide the flexibility and reliability you need to accelerate discovery.



Specifications

Operational	
Heating rate	Up to 3.3°C/sec
Cooling rate	Up to 2.0°C/sec
Method of heating/cooling	Peltier and Joule
Modes of temperature monitoring	Algorithm
Temperature	
Range	4–100°C
Accuracy	±0.3°C
Uniformity	±0.4°C
Overshoot maximum	<0.5°C
Heated lid	Up to 110°C
Gradient Mode	
Gradient accuracy	±0.4°C
Row uniformity	±0.4°C
Gradient range	40–100°C
Temperature differential range	1–25°C
Descriptive	
Sample capacity	96 wells
Sample size	10–100 µl
Licensed for PCR	Yes
Communications	USB 2.0 Hi-Speed
Electrical approvals	IEC, CE
Dimensions (W x D x H)	29.2 x 58.4 x 38.7 cm (11.5 x 23 x 15.2")
Weight	17.6 kg (39 lb)
Optical System	
Optical lamp	Tungsten-halogen
Sensitivity	Detects 1 copy of IL-1β in human genomic DNA
Dynamic range	9 orders of magnitude
Excitation/emission filters	2 filter sets included
Fluorescence excitation range	470–545 nm
Fluorescence detection range	
Channel 1	515–545 nm
Channel 2	565–585 nm
Software	
Operating platform	Windows XP Professional, Windows Vista
Multiplex analysis	Up to 2 targets per well
Data analysis modes	Absolute quantitation with standard curve Automated allelic discrimination by end-point fluorescence or threshold cycle Melt-curve analysis End-point analysis for up to 2 fluorophores Gene expression analysis by relative quantity (ΔC_T) or normalized expression ($\Delta\Delta C_T$) with multiple reference genes Multifile gene expression analysis for comparison of more than 5,000 C_T values
Data export modes	Print data graphs and tables from software-based menu Export formatted data table to Microsoft Excel Copy and paste directly into Microsoft Excel, Word, or PowerPoint files Detailed reports contain run conditions, data graphs and tables, and data analysis parameters

Ordering Information

Catalog #	Description
170-9790	**MyiQ2 Two-Color Real-Time PCR Detection System**, includes iCycler chassis, 96-well block, MyiQ2 optics module, iQ5 optical system software, version 2.1, accessories
170-9759	**MyiQ2 Optical System Upgrade Kit**, includes MyiQ2 optics module, optical lid, 96-well block, iQ5 optical system software, version 2.1, accessories
223-9441	**iQ 96-Well PCR Plates**, 25
HSS-9601	**Hard-Shell® Full-Height 96-Well Semi-Skirted PCR Plates**, clear shell, clear well, 25
MSB-1001	**Microseal® 'B' Adhesive Seals**, optically clear, 100
TBS-0201	**8-Tube Strips Without Caps (0.2 ml)**, 120
TCS-0803	**Optical Flat 8-Cap Strips**, 120
170-8756	**Halogen Lamp**, replacement, for iCycler iQ®, iQ5, MyiQ™, and MyiQ2 systems
170-8791	**MyiQ2 Calibrator Dye Solution Kit**, 1x calibration dye solutions, 3 tubes each of FAM, HEX, JOE, and TET
170-8794	**External Well Factor Solution**, 5 x 1.5 ml tubes
172-5230	**SsoFast Probes Supermix**, 200 x 20 µl reactions, 2x mix contains dNTPs, Sso7d fusion polymerase, $MgCl_2$, stabilizers
170-8880	**iQ™ SYBR® Green Supermix**, 100 x 50 µl reactions, 2x mix
172-5200	**SsoFast EvaGreen Supermix**, 200 x 20 µl reactions, 2x mix contains dNTPs, Sso7d fusion polymerase, $MgCl_2$, EvaGreen dye, stabilizers
170-8890	**iScript cDNA Synthesis Kit**, 25 x 20 µl reactions
170-8896	**iScript Select cDNA Synthesis Kit**, 25 x 20 µl reactions
170-8892	**iScript™ One-Step RT-PCR Kit With SYBR® Green**, 50 x 50 µl reactions
170-8894	**iScript One-Step RT-PCR Kit for Probes**, 50 x 50 µl reactions

Bustin SA et al. (2009). The MIQE guidelines: minimum information for publication of quantitative real-time PCR experiments. Clin Chem 55, 611-622.

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