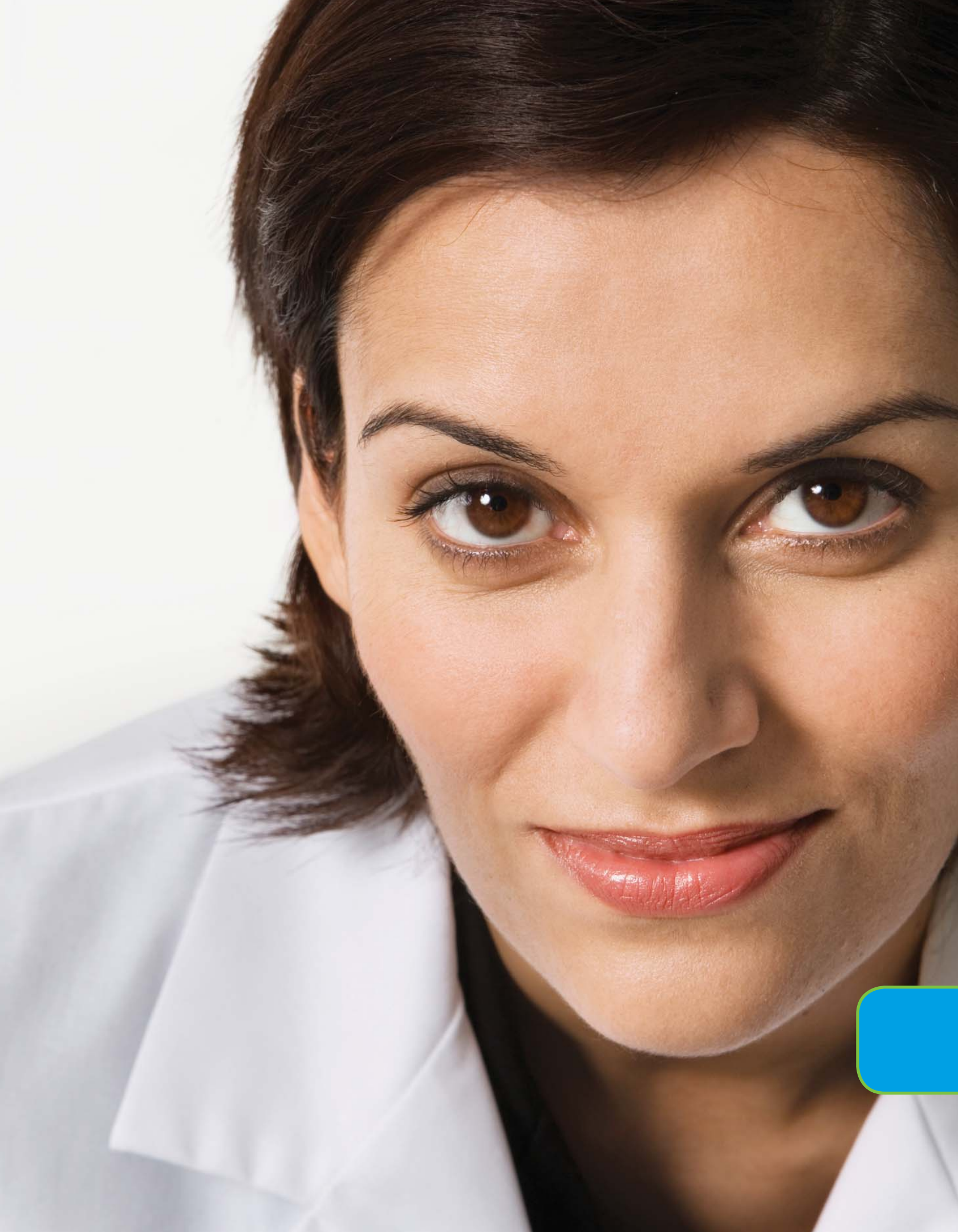
QPCR Designed for You

Superior Instruments, Reagents, and Support.

Agilent Technologies



Agilent's portfolio of qPCR products delivers speed, reliability, and—above all—confidence in your results.

Technology Designed for You

Exceptional qPCR requires more than just great technology—it requires tools that are specifically designed to optimize your work, combined with the expert service and support you need to ensure your success.

Agilent Technologies offers qPCR products engineered to simplify and improve your sample preparation, assay setup, and data analysis. Featuring a proven and reliable platform, industry leading support, and a catalog of superior reagents—including our new line of Brilliant III instrument-specific reagents—Agilent is committed to providing the best qPCR experience available.

Tools You Can Rely On

Cited in more than 3000 publications, the Agilent Mx3005P and Mx3000P QPCR Systems are the most flexible—and reliable—instruments available for gene expression analysis, microarray data validation, SNP genotyping, pathogen detection, DNA methylation analysis, and chromatin immuno-precipitation studies. Agilent's qPCR software, MxPro, provides users with an intuitive interface, quick experiment design, powerful data analysis and easy report generation. All of these features and more make qPCR with the Mx instrument an exciting and dependable user experience.

Our Brilliant II reagents offer superior sensitivity and rapid cycling for fast, reliable results. Our new Brilliant III ultra-fast reagents are specifically developed for—and validated on—the leading fast qPCR platforms, providing optimal results on your fast cycler of choice.

Finally, our qPCR support team provides true application expertise, drawing on decades of experience to help solve the challenges that are in front of you.

Whatever your work demands, Agilent wants to be the partner that provides the qPCR solutions that ensure your success.

A Better Partner for Your qPCR

Agilent Technologies

The Mx3005P and Mx3000P QPCR Systems

Proven Leaders in Flexibility and Performance

The Mx3005P and Mx3000P QPCR Systems are among the most reliable—and trusted—instruments available, with a long record of citations in peer-reviewed journals. Offering unmatched flexibility and reliability, the systems are ideal for a wide variety of applications and chemistries.

Highly-reproducible results are the product of the Mx3005P and Mx3000P's single-light source, single-detector precision optic scanning design (Figure 1), providing uniform excitation and detection, coupled with the trusted Peltier-based thermal system, which ensures uniform ramping and thermal accuracy (Figure 2).

The advanced optical system used by both the Mx3005P and Mx3000P offers numerous key benefits.

Eliminates optical variation by ensuring uniform excitation intensity and emission measurement from well-to-well, across the entire plate. Elimination of optical variation comes from the single-scanning fiber optic head design that ensures:

- Each well receives the same amount of excitation light
- Each well receives excitation light for the same length of time
- Each well is the same distance from the detector

Eliminates the need for well-to-well signal correction by calibration or reference dyes. Uniformity of well-to-well measurements from the single-scanning fiber optic head design reduces the need for additional signal correction and calibration steps, streamlining your assay.

Allows accurate quantification of low- to high-abundance targets. Use of a single photomultiplier tube (PMT) that provides linear detection over ten orders of magnitude ensures superior sensitivity and reproducibility.

Increases flexibility. Has four (Mx3000P) or five (Mx3005P) optical channels with user-selected filters that cover a broad range of excitation wavelengths, allowing use with most fluorescent dyes.

Mx3005P QPCR System—Unmatched Flexibility

The well-equipped Mx3005P QPCR System's five-position user-customizable filter wheel design allows you to choose which five

filters are installed in your instrument from a list of eight filter sets spanning deep blue dyes to far red dyes (Figure 3). This flexibility enables:

- Multiplex dye combinations with up to five targets per well
- Custom excitation and emission filter pairs to accommodate the rapidly-expanding list of fluorescent dyes
- Most fluorescent dye chemistries for FRET or other applications:
  - Ability to mismatch excitation and emission filters
  - Large Stokes shift dyes
- Numerous applications your future research may need

Figure 1. Mx3005P Optical System Design

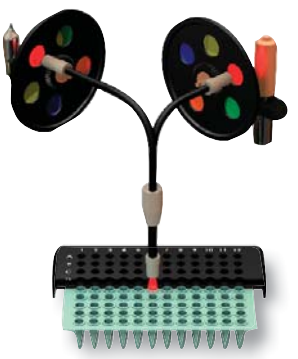


Figure 1. The halogen lamp in the Mx instruments provides a wide range of excitation, allowing more dye flexibility with more intensity than standard light emitting diodes (LEDs). The excitation and emission filters are defined to narrow wavelengths to minimize fluorescence signal crosstalk. Fiber optic bundles channel the light into the plate and back to the PMT to ensure minimal signal loss.

Figure 2. 96-Well Uniformity

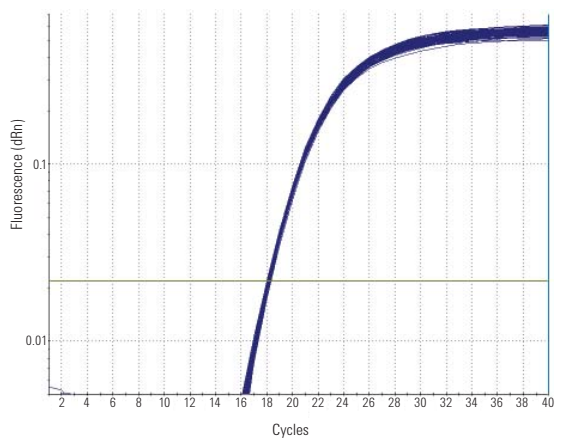


Figure 2. A precision thermal design with high-performance optics supports excellent well-to-well uniformity. SYBR® Green I uniformity assay for ß-actin containing plasmid. Average Ct value at threshold is 18.1 and standard deviation of Ct values is 0.05. Ct range across 96 wells is 0.26 cycles (18.00 to 18.26).

Mx3000P QPCR System—Full-Featured Performance

The Mx3000P is a high-performance yet low-cost option designed to accommodate basic to advanced experimental applications. Featuring four optical channels with user-selected filters covering a broad range of excitation wavelengths, the Mx3000P can be used with most fluorescent dyes, bringing flexible real-time qPCR instrumentation to the individual researcher with a limited budget.

Figure 3. Five-Plex Standard Curves

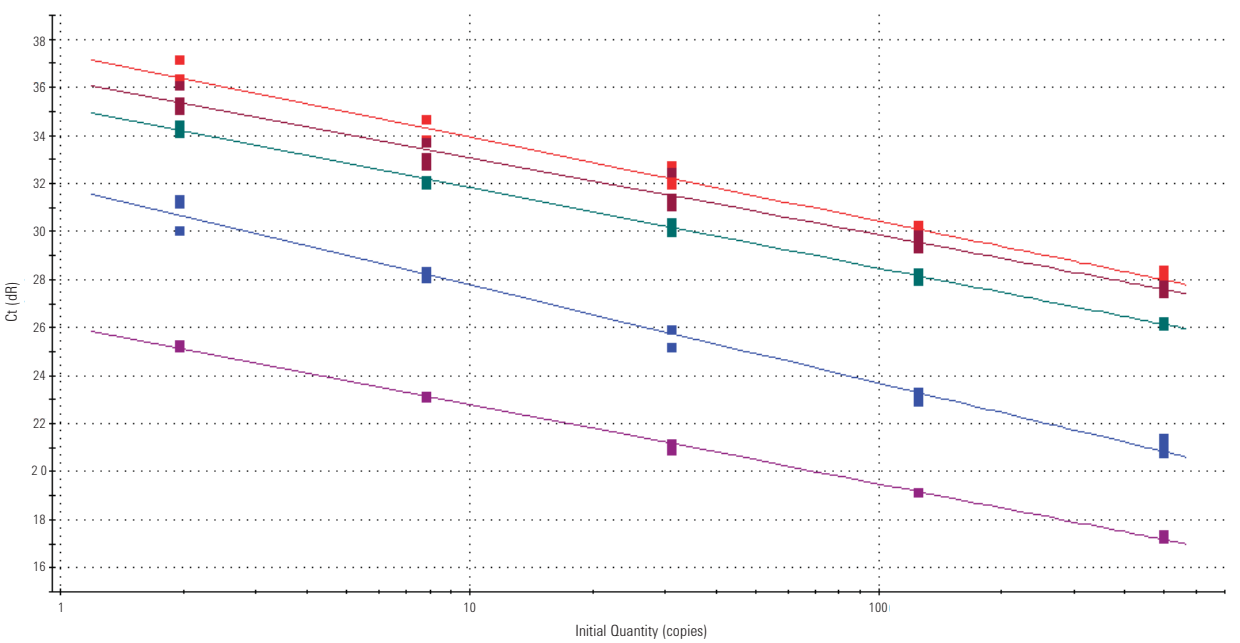


Figure 3. Five target multiplex assay on the Mx3005P system using Alexa Fluor® 350, FAM™, HEX™, ROX™, and Cy™5 filters. Three replicates of four-fold dilutions of qPCR Human Universal Reference cDNA detecting five gene targets simultaneously. Detection from the highest abundance to the lowest abundance gene target (CYCLO to ENOS gene targets) spans a Ct range of 17–37 (delta Ct = 20).

MxPro QPCR Software—Designed for Ease of Use and Powerful Data Analysis

Agilent's MxPro qPCR software incorporates innovative data analysis and intuitive design for the ultimate ease of use. From one-click plate setup to custom report generation, MxPro software is designed to help you move your research further with ease (Figure 4). At the same time, the software also has many advanced features that will allow the researcher to grow with the software and experience all of the power MxPro has to offer.

- Analyze up to 12 separate plates at once—Multiple Experiment Analysis functionality allows the user to analyze a single experiment that spans several plates simultaneously
- Easily customize each experiment
  - Input your own well names
  - Assign your own assay or gene target name to each dye
  - Work with a flexible thermal profile setup
- View and analyze data in real time
- Choose between two options for setting baseline subtraction and thresholds when analyzing data. For example, the "Adaptive Baseline" algorithm calculates baseline start and end cycles independently for each amplification plot
- Create custom reports—plots, charts, and labels can be exported directly to Microsoft applications

MxPro ET

MxPro is 21 CFR Part 11 compatible, complete with secure application login, database file management, and data file audit trails. The audit trail records changes made to the data, and reports can be generated for the audit trail, user accounts, and error logs.

Figure 4. Automated Analysis of Gene Expression Data

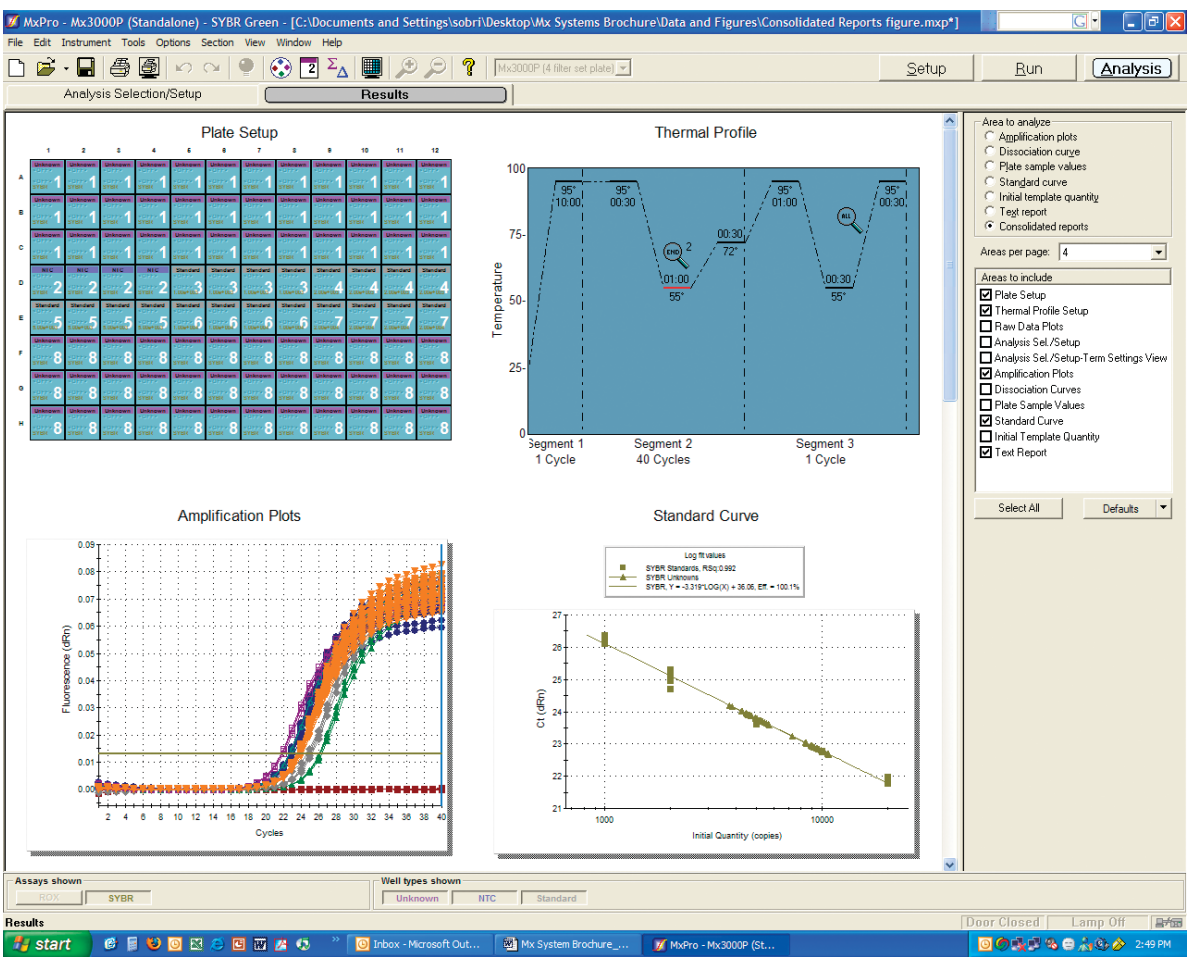


Figure 4. Create a custom data report by determining report format and which data sets to display. In the figure above, Plate Setup, Thermal Profile, Amplification Plots, Standard Curve, and Text Report are selected for the report.

Brilliant II and Brilliant III qPCR Reagents

Specificity, Sensitivity, and Speed—What Matters Most in Your qPCR

Agilent's Brilliant qPCR reagents are optimized for superior sensitivity, delivering exceptional quantification and reproducibility. The new Brilliant III QPCR Reagents have been specifically developed and validated on fast-cycling real-time PCR instruments, to deliver superior performance right out of the tube.

Brilliant II

With Agilent's qPCR reagent products, you can do more in less time and be confident that your results are of the highest quality. Brilliant II reagents provide:

- Rapid run times—complete 40 PCR cycles in around 90 minutes
- Minimized off-target product formation for improved amplification efficiencies and greater sensitivity
- Accurate detection of low copy-number targets
- Ability to simultaneously amplify low- and high-abundance targets through multiplexing
- Earlier Ct detection across a wide dynamic range

Brilliant II QPCR and QRT-PCR Reagents

Your qPCR needs are dependent upon your application, your sample—RNA, DNA, or cDNA—and your real-time PCR instrument. Brilliant II reagents offer you the flexibility to amplify and quantify different templates and targets on almost any real-time PCR system.

The Brilliant II SYBR Green QPCR Master Mix exhibits twice the fluorescent intensity as our original master mix and higher fluorescence than many competitor reagents. The master mix formulation is offered in both low and high ROX reference dye concentrations for different qPCR systems. When using specific probe-based detection, Brilliant II reagents are capable of quantifying 2-fold differences (equal to 1 cycle or 1 Ct difference) in samples between 5 and 2.5 copy equivalents at 95% efficiency.

The Brilliant II QRT-PCR 1-Step Master Mixes—available in SYBR Green, Low ROX, and High ROX formulations—allow rapid one-step, one-tube quantification of RNA. Highly-reproducible quantification is linear over a wide concentration range—from 200 ng down to 0.2 pg, and template is detected, on average, at ~2–5 Cts earlier with tighter replicates at the lower concentrations.

Brilliant II FAST QPCR Reagents

Brilliant II FAST Master Mix kits are developed to reduce assay time without compromising target detection sensitivity, specificity, or reproducibility. Primer-dimer formation is minimized and run time is reduced by utilizing rapid hot-start capabilities. An accelerated protocol completes 40 cycles within 48 minutes while exhibiting earlier Ct detection across a wide dynamic range and maintaining high-detection sensitivity. Brilliant II FAST QPCR Master Mixes provide the reagents to make your results stand out, and in much less time.

Brilliant Multiplex QPCR Master Mixes

With Brilliant Multiplex QPCR Master Mixes, you can increase your throughput through multiplexing:

- Amplify and quantify up to four targets simultaneously
- Amplify and quantify both high- and low-abundance targets in the same well

Brilliant II cDNA Synthesis for Two-Step QRT-PCR Applications

cDNA synthesis and two-step QRT-PCR applications are supported by our Brilliant II QRT-PCR reagents. Using our fast and flexible AffinityScript Multiple Temperature Reverse Transcriptase, cDNA can be synthesized from single-stranded RNA, DNA, or even an RNA:DNA hybrid using a fast, 15-minute protocol for most targets. After cDNA synthesis, cDNA can be quantified using any of the Brilliant II or Brilliant III Master Mixes.

Brilliant III

Next generation Brilliant III Ultra-Fast reagents are designed and optimized for fast-cycling PCR instruments, providing even faster assay times with the same consistent performance and sensitivity as our Brilliant II reagents. Brilliant III reagents offer several outstanding benefits:

- A newly engineered, highly processive *Taq* mutant with a faster extension rate
- A novel hot-start technology that enhances specificity by reducing the formation of primer-dimers and secondary non-specific PCR products

These unique reagents are compatible with sequence-specific probes and SYBR Green fluorescent detection, and support both qPCR and qRT-PCR applications. With run times of less than 40 minutes and increased sensitivity, Brilliant III reagents deliver pristine results faster than ever before.

Brilliant III Ultra-Fast QPCR/QRT-PCR Master Mixes for ABI StepOnePlus Real-Time PCR System

Brilliant III reagents for qPCR and qRT-PCR are designed to provide the fastest cycling times and cleanest amplifications for the ABI StepOnePlus Real-Time PCR instrument while still providing superior sensitivity. Brilliant III reagents generated drastically cleaner results at much higher amplification efficiencies than the competitor's reagents (Figures 5a and 5b).

Brilliant III Ultra-Fast QPCR/QRT-PCR Master Mixes for Bio-Rad CFX96 Real-Time PCR System

If you use the BioRad CFX96 Real-Time PCR System, Brilliant III reagents will provide the same highly-sensitive, reliable and reproducible results as the Brilliant II reagents, but with fewer non-specific amplification products and in less time.

Figure 5a. Minimizing Primer-Dimerization Delivers Superior Sensitivity

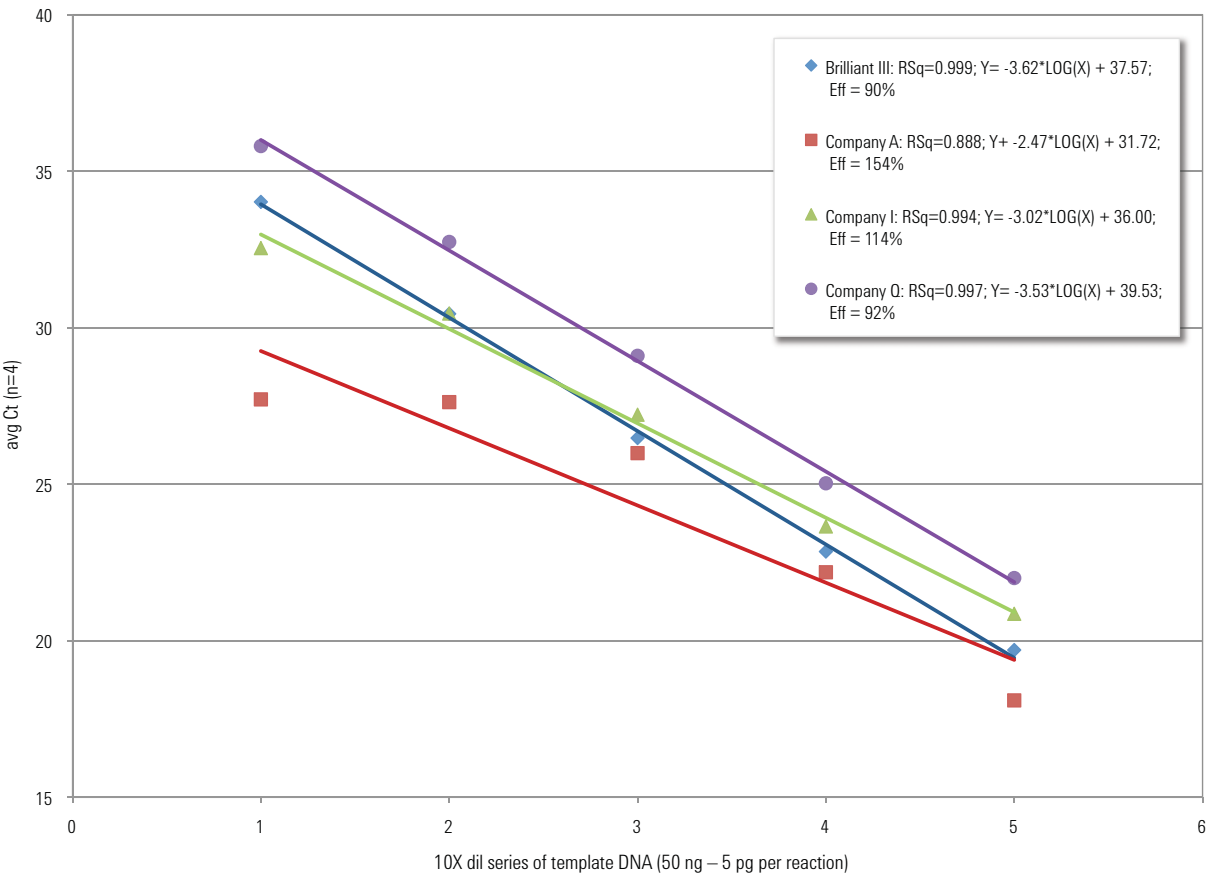


Figure 5a. Ten-fold dilution series of 50 ng to 50 pg of human genomic DNA to detect *Numb*-1.

Figure 5b. Minimizing Primer Dimerization Delivers Superior Sensitivity

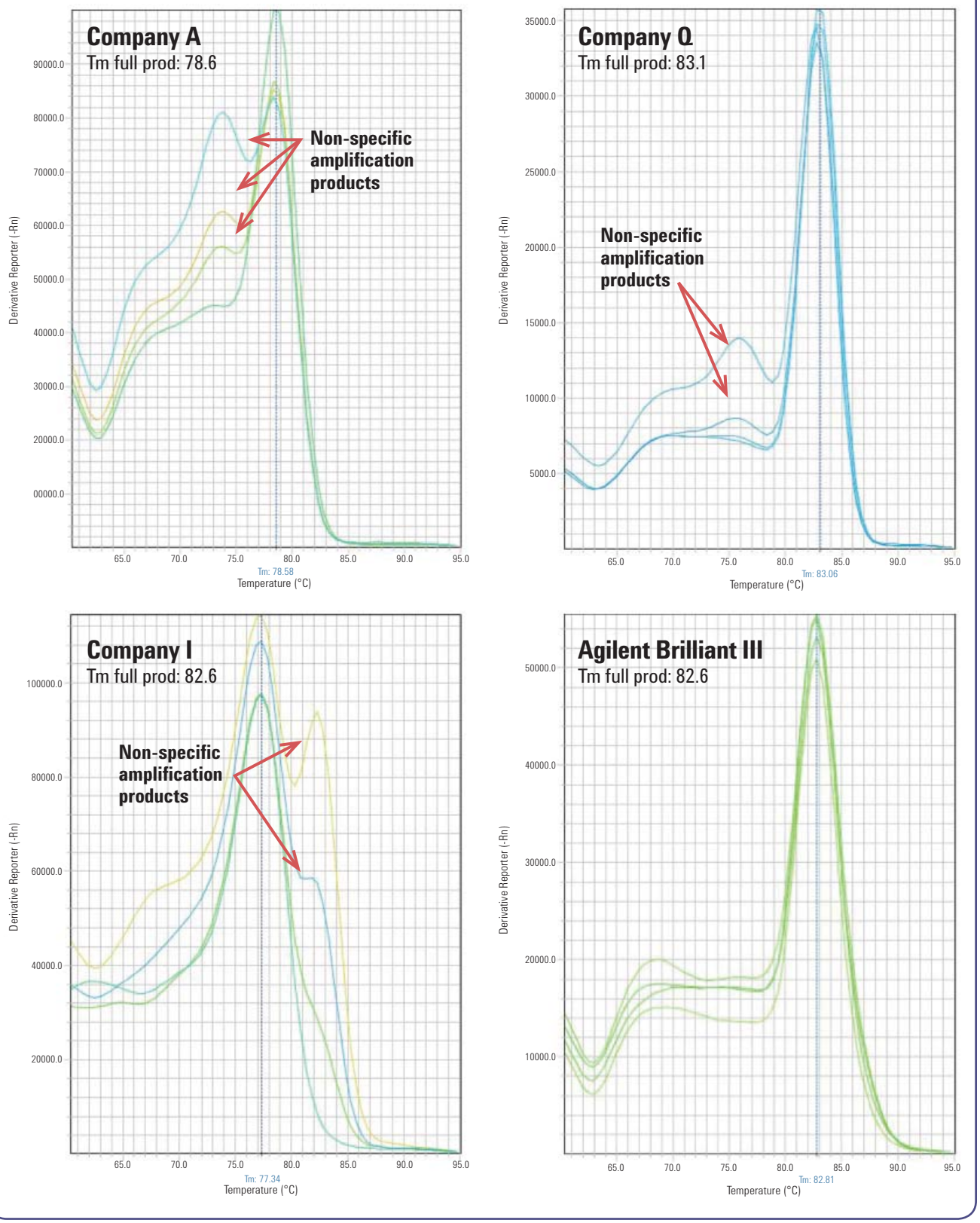


Figure 5b. The Dissociation Curve shows primer-dimers or secondary non-specific PCR artifacts for all competitor master mixes. Although Company A and Company I generate earlier Cts, the efficiency of the reaction is compromised by formation of these artifacts competing with the specific product amplification, reducing the assay limit of detection and dynamic range.

Support You Can Count On

Agilent is committed to providing industry-leading support to our customers.

We understand that the key to your success is more than just great products; you also need reliable technical support to help you solve whatever challenges are in front of you. That's why we make our staff easily accessible to you by phone or online. More than just technicians, our support team consists of scientists and application experts with deep experience in qPCR technology. So when you call or contact us with an issue, you get the full attention of a qPCR expert who is trained and dedicated to solving your problem, and getting you back to work.

To make sure you know just how valued you are, we've created the Agilent qPCR Bill of Rights. Keep it as a reminder of the things you can consistently expect as an Agilent qPCR customer.

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