

# Real-time PCR solutions, from sample preparation to data analysis

For over a quarter century, we've provided you with reliable reagents, instruments, and software for all your real-time PCR (qPCR) workflow needs. Whether you're doing sample preparation, reverse transcription, amplification and detection using Applied Biosystems™ TaqMan® Assay or SYBR™ Green dye chemistry on our real-time PCR instruments, or data analysis, you can continue to trust us to support your research with high-quality products and services designed to help you get consistently excellent data.

## Sample preparation

### **Applied Biosystems™ TaqMan® Gene Expression Cells-to-C<sub>T</sub>™ Kit**

Easily perform expression analysis using cultured cells without purification of RNA. Reagents are included for cell lysis and RNA preservation, genomic DNA (gDNA) removal, and reverse transcription.

### **Invitrogen™ mirVana™ miRNA Isolation Kit**

Isolate total RNA containing small RNAs such as miRNA, siRNA, and snRNA. This kit includes reagents to enrich for small RNA (<200 bp), enabling sensitive detection of low levels of small RNAs.

### **Applied Biosystems™ Arcturus™ PicoPure™ kits**

Isolate RNA or extract DNA from laser-capture microdissected (LCM) samples. Easily perform expression analysis from as little as a single LCM cell.

### **Applied Biosystems™ Arcturus™ Paradise™ kits**

Isolate RNA from formalin-fixed, paraffin-embedded (FFPE) LCM samples.

### **Applied Biosystems™ Protein Expression Sample Preparation Kit**

Extract proteins from your target and control cell lysates for use with Applied Biosystems™ TaqMan® Protein Assays.

### **Applied Biosystems™ TaqMan® Sample-to-SNP™ Kit**

Perform TaqMan Assay chemistry-based genotyping analysis on a variety of sample types with a streamlined protocol.

### **Applied Biosystems™ MagMAX™ Cell-Free DNA Isolation Kit**

### **Applied Biosystems™ MagMAX™ Cell-Free Total Nucleic Acid Isolation Kit**

Rapidly purify nucleic acids from cell-free samples for liquid biopsy research. Optimized specifically for enrichment of cell-free DNA (cfDNA) and cell-free total nucleic acid (cfTNA), but not gDNA, which means increased recovery and lower starting volumes. Elute in volumes compatible with Ion Torrent™ OncoPrint™ assays.

Find out more at [thermofisher.com/cfdnaisolation](http://thermofisher.com/cfdnaisolation)

## Sample preparation (continued)

### **Applied Biosystems™ MagMAX™ DNA Multi-Sample Ultra 2.0 Kit**

Extract high-quality DNA that is compatible with next-generation sequencing (NGS) or array platforms, from a range of sample types. Choose from multiple protocols using either large- or small-volume inputs, without normalization.

Find out more at [thermofisher.com/magmaxultra](https://thermofisher.com/magmaxultra)

### **Thermo Scientific™ KingFisher™ Flex- and Duo-ready reagents**

Reduce your pipetting steps with prefilled reagent plates for Thermo Scientific™ KingFisher™ Duo Prime and KingFisher™ Flex instruments. MagMAX DNA Multi-Sample Ultra 2.0 isolation reagents now come prefilled into KingFisher plates. Just peel off the plate cover, add lysate samples, and load plates onto the instrument.

Find out more at [thermofisher.com/kingfisherready](https://thermofisher.com/kingfisherready)

### **Applied Biosystems™ MagMAX™ Saliva gDNA Isolation Kit**

Speed up your processing of saliva samples for genetic testing. Recover DNA that is compatible with NGS and array platforms, from 96 samples, in 25 minutes. Reagents were tested with the 10 most common saliva collection devices to confirm consistent results.

Find out more at [thermofisher.com/saliva](https://thermofisher.com/saliva)

### **Applied Biosystems™ MagMAX™ Microbiome Ultra Nucleic Acid Isolation Kit**

Recover nucleic acid from a wide range of microorganisms without additional processing steps. Compatible with difficult samples types such as stool and soil.

Find out more at [thermofisher.com/magmaxmicrobiome](https://thermofisher.com/magmaxmicrobiome)

### **Applied Biosystems™ MagMAX™ Viral/Pathogen Ultra Nucleic Acid Isolation Kit**

### **Applied Biosystems™ MagMAX™ Viral/Pathogen Nucleic Acid Isolation Kit**

Recover nucleic acid from a range of sample types. Compatible with low-titer samples. No need for carrier RNA, which means less interference with NGS and fewer steps required.

Find out more at [thermofisher.com/magmaxviralpathogen](https://thermofisher.com/magmaxviralpathogen)

## Reverse transcription

### **Applied Biosystems™ TaqMan® Advanced miRNA cDNA Synthesis Kit**

Prepare a cDNA template for use with TaqMan Advanced miRNA Assays with universal reverse transcription (RT) chemistry.

### **Applied Biosystems™ TaqMan® MicroRNA Reverse Transcription Kit**

Use the contents of this kit with the RT primer provided with the Applied Biosystems™ TaqMan® MicroRNA Assay to convert miRNA to cDNA. Contains components for optimal performance of TaqMan MicroRNA Assays.

### **Invitrogen™ SuperScript™ IV VILO™ Master Mix**

Get high-quality RT with maximum sensitivity and dynamic range in a streamlined workflow that includes a 10-minute reaction time.

Find out more at [thermofisher.com/vilo](https://thermofisher.com/vilo)

## TaqMan Assays by application

### Gene expression analysis

Applied Biosystems™ TaqMan® Gene Expression Assays represent the largest collection of predesigned assays in the industry with over 2.8 million assays across 32 eukaryotic species and numerous microbes. As with all of our TaqMan Assays, TaqMan Gene Expression Assays contain target primers and an optimized sequence-specific probe to help you get results faster, with no extra design, optimization, or lengthy melt-curve analysis needed.

- Gold-standard specificity, sensitivity, and reproducibility
- Designed to detect virtually any transcript
- Best-coverage assays available to detect the highest number of transcript variants possible
- Performance guaranteed; for full details, go to [thermofisher.com/taqmanguarantee](https://thermofisher.com/taqmanguarantee)

### SNP genotyping

With over 17 million single-nucleotide polymorphism (SNP) assays now available, including 4 million HapMap SNPs, nearly 1 million coding SNPs, and 1.4 million SNPs from the 1000 Genomes Project, Applied Biosystems™ TaqMan® SNP Genotyping Assays make it easy to perform human and mouse SNP genotyping studies with highly accurate, reproducible, and reliable results.

### Copy number variation

Copy number variations (CNVs) are associated with conditions such as cancer, immune diseases, and neurological disorders, as well as processes such as drug metabolism. Applied Biosystems™ TaqMan® Copy Number Assays can facilitate your clinical research studies and include a collection of more than 1.6 million human assays targeting gene exons and introns, extragenic regions, and CNV sequences from the Database of Genomic Variants (DGV). The mouse collection includes over 186,000 assays targeting gene exons. Assays for common vector marker and reporter genes are also available for transgenic studies.

### Drug metabolism genotyping

Choose from over 2,700 unique Applied Biosystems™ TaqMan® Drug Metabolism Genotyping Assays to detect polymorphisms in all known high-value drug metabolism enzyme (DME) pharmacogenomic markers for clinical research studies, including PharmaADME core markers.



### MicroRNA analysis

Applied Biosystems™ TaqMan® Advanced miRNA Assays employ a universal RT step for a streamlined workflow, and a universal miR-Amp step to enable highly sensitive detection by real-time PCR.

- Detect as few as 60 copies of input miRNA
- Target only mature miRNA and distinguish between highly homologous miRNAs
- Quantify mature miRNA from as little as 1 ng or 2  $\mu$ L of purified total RNA from plasma or serum
- Compatible with total RNA from tissues, FFPE tissues, and biofluids, including serum and plasma

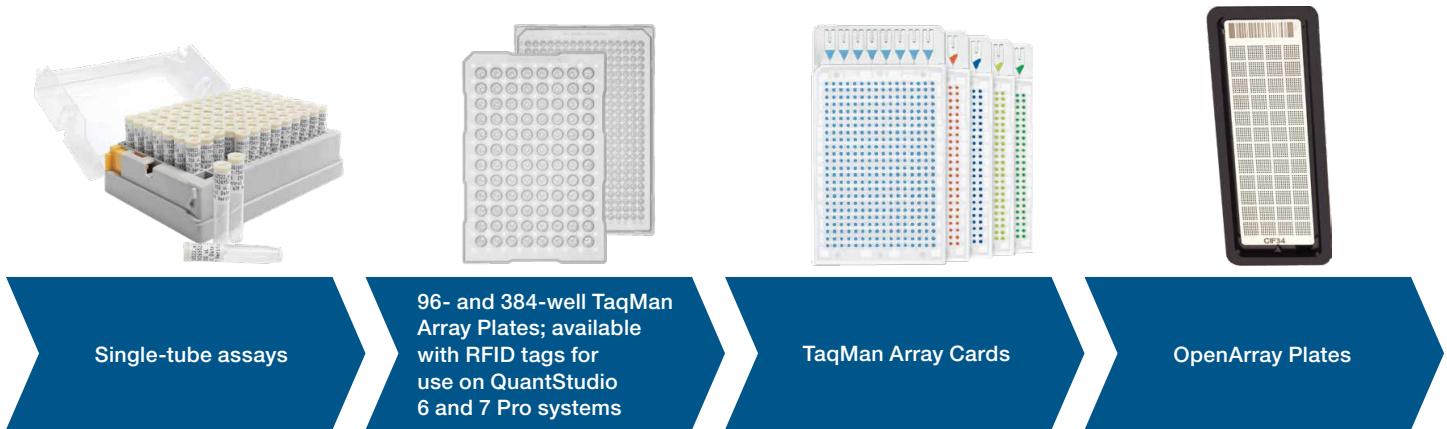
### Protein expression

Applied Biosystems™ TaqMan® Protein Assays enable fast, easy identification and relative quantification of protein markers from limited quantities of cultured cells. Choose from predesigned assays, or create your own using your antibodies.

### Applied Biosystems™ TaqMan® Liquid Biopsy dPCR Assays

Digital PCR (dPCR) is an established method for fast and reliable identification of significant cancer-related mutations. For liquid biopsy research, dPCR assays are a precise, cost-effective, and rapid method for studying response and resistance to treatment by testing for relevant cancer-driver and therapy-resistant mutations.

Find out more at [thermofisher.com/taqman](https://thermofisher.com/taqman)



## Additional TaqMan Assay products and services

### Choice of formats

All predesigned and custom TaqMan Assays are available in single-tube format in various sizes for maximum flexibility or can be plated in three different formats to minimize your effort and cost: Applied Biosystems™ TaqMan® Array Plates for quick setup for medium to high (96- to 384-well) throughput; Applied Biosystems™ TaqMan® Array Cards for ease of use in automation; and Applied Biosystems™ TaqMan® OpenArray™ Plates for high throughput and lower cost per sample. Choose between predefined, flexible-content, or custom options to design your own panel.

### Custom assay design

If one of our more than 20 million predesigned assays doesn't meet your needs, our Applied Biosystems™ Custom TaqMan® Assay Design Tool lets you easily design and order a custom TaqMan Assay for gene expression or genotyping applications based on your specifications. We also offer custom assay design services to assist with other nonstandard design requests.

Find out more at [thermofisher.com/taqman](http://thermofisher.com/taqman)

### Duplexing TaqMan Gene Expression Assays

TaqMan Gene Expression Assays are easily duplexed, since both predesigned and custom TaqMan Gene Expression Assays are available with either FAM™ or VIC™ fluorescent reporter dyes. The most common duplex reaction is combining the target of interest and endogenous control assays in the same well. An endogenous control gene or set of genes is typically used to control for experimental variability due to RNA input and shows expression levels that are relatively constant and moderately abundant across tissues, cell types, and treatment protocols.

Find out more at [thermofisher.com/duplexing](http://thermofisher.com/duplexing)

### We stand behind every TaqMan Assay you buy from us

We guarantee the performance of all our predesigned TaqMan Assays for real-time PCR and dPCR experiments. Our gene expression, noncoding RNA, SNP genotyping, copy number, drug metabolism enzyme, mutation detection, and protein assays enable you to obtain the highest quality and performance available. These assays are designed and verified using up-to-date annotations and gold-standard TaqMan Assay chemistry.

If the performance of a TaqMan Assay doesn't meet the standards of our guarantee, we'll replace it at no cost, or credit your account.\*

\* Terms and conditions apply. For full details, go to [thermofisher.com/taqmanguarantee](http://thermofisher.com/taqmanguarantee).



## Master mixes for real-time PCR amplification

### Gene expression master mixes

(TaqMan Assay chemistry):

#### Applied Biosystems™ TaqMan® Fast Advanced Master Mix

Superior performance in single-target and duplex real-time PCR reactions for both routine and challenging samples; can be used in both standard and fast cycling conditions and has excellent benchtop stability.

#### Applied Biosystems™ TaqMan® Fast Virus 1-Step Master Mix

A 4X formulation designed for reliable, highly sensitive DNA and RNA virus detection, even in the presence of common reaction inhibitors. The 1-step single-tube format allows for uniform handling and processing, while being formulated for fast-cycling, multiplex real-time PCR.

### Gene expression master mix

(SYBR Green dye chemistry):

#### Applied Biosystems™ PowerTrack™ SYBR™ Green Master Mix

Helps reduce pipetting errors with a two-color tracking dye system. Formulated for superior specificity and tight reproducibility in  $C_t$  values over a broad dynamic range. Broad primer  $T_m$  and primer concentration compatibility allows flexibility in qPCR reaction setup with minimal optimization. Compatible with SuperScript IV VILO Master Mix for fast, reproducible reverse transcription results.

### TaqPath gene expression master mixes\*

(TaqMan Assay chemistry):

#### Applied Biosystems™ TaqPath™ qPCR Master Mix, CG\*

TaqPath master mixes have been verified to deliver superior lot-to-lot reproducibility across a wide variety of assays and applications. These general-purpose reagents are manufactured in an ISO 13485 facility and include control measures such as change control, document control, and purchasing controls.

This master mix contains a thermostable fast DNA polymerase and dNTPs in an optimized buffer to provide maximum robustness and reproducibility. Provides superior performance for singleplex and multiplex gene expression and miRNA analysis, even with samples containing inhibitors.

#### Applied Biosystems™ TaqPath™ 1-Step RT-qPCR Master Mix\*

This 4X formulation is designed for sensitive, fast 1-step processing of RNA and DNA targets for pathogen detection and gene expression workflows, even in the presence of common PCR inhibitors.

#### Applied Biosystems™ TaqPath™ 1-Step RT-qPCR Multiplex Master Mix\*

To allow for higher-order multiplex reactions, this master mix is formulated without ROX™ or Mustang Purple™ dye; additional exogenous or endogenous controls or targets may be run simultaneously for quality control or increased efficiency.

### TaqPath genotyping and CNV master mixes\*

(TaqMan Assay chemistry):

#### Applied Biosystems™ TaqPath™ ProAmp™ Master Mix\* Applied Biosystems™ TaqPath™ ProAmp™ Multiplex Master Mix\*

Designed to be high-performing, these high-throughput genotyping and CNV master mixes have a broad dynamic range and work even with samples containing inhibitors.

Find out more at [thermofisher.com/qpcrmm](https://thermofisher.com/qpcrmm)

\* For Laboratory Use.



## Real-time PCR systems

### Applied Biosystems™ QuantStudio™ 3 Real-Time PCR System

A small, affordable solution connecting you to your data like never before. Designed to be easy to use and highly interactive, this system offers the high performance expected from Applied Biosystems™ instruments.

- Easy-to-use, intuitive software design enables easy experiment setup, and an interactive system allows you to get results faster
- Use Connect, our cloud-based platform, to access and analyze your data anytime, from anywhere with an internet connection; back up and share files to collaborate with colleagues worldwide
- Applied Biosystems™ VeriFlex™ Blocks technology provides 3 independent temperature zones for precise control over your qPCR optimization
- Factory-calibrated for optical and thermal accuracy, the instrument is delivered ready for quick installation and use

### Applied Biosystems™ QuantStudio™ 5 Real-Time PCR System

A high-performance benchtop instrument that gives you greater control of your experimental data. Interact with the latest advancements in touchscreen usability, access your data more easily than ever before, and securely share your results with collaborators around the world.

- Multiplex with ease—6 excitation filters and 6 emission filters offer 21 different color combinations, allowing a broad range of detection chemistries and maximum multiplexing\*
- Use Connect, our cloud-based platform, to access and analyze your data anytime, from anywhere with an internet connection; back up and share files to collaborate with colleagues worldwide
- VeriFlex technology provides 6 independent temperature zones for precise control over your PCR optimization
- Have confidence in your records—built-in security, auditing, and electronic signature (SAE) package comes standard on the QuantStudio 5 system to assist you in 21 CFR Part 11 compliance
- Protect your work with individual user accounts and the ability to lock a protocol template, giving you peace of mind that only you can control your runs

Find out more at [thermofisher.com/quantstudio3-5](http://thermofisher.com/quantstudio3-5)

\* 384-well format supports 5 colors; no VeriFlex Blocks temperature control.



## Applied Biosystems™ QuantStudio™ 6 Flex Real-Time PCR System

Ideal for laboratories with multiple applications or end users on a limited budget. With an option to upgrade to an Applied Biosystems™ QuantStudio™ 7 Flex Real-Time PCR System to accommodate automation or TaqMan Array Cards, the QuantStudio 6 Flex system is the ideal qPCR platform if your needs change in the future.

- With one instrument, you can interchange between 96-well, 96-well Fast, and 384-well formats
- The intuitive software, easy touchscreen setup, and effortless block change are designed to let you get started right away
- Detect as small as 1.5-fold changes in singleplex reactions and with a dynamic range of 10 logarithmic units
- Can be seamlessly upgraded to a QuantStudio 7 Flex system by a field service engineer to give you additional automation, throughput, and multiplexing capabilities

## QuantStudio 7 Flex Real-Time PCR System

Delivers the proven reliability, sensitivity, and accuracy of the Applied Biosystems™ ViiA™ 7 Real-Time System in a new industrial design. The QuantStudio 7 Flex system is optimized to enable the broadest range of qPCR applications.

- Run hundreds of real-time PCR reactions effortlessly using TaqMan Array Cards integrated with the Applied Biosystems™ Twister™ Automation Robot; the QuantStudio 7 Flex system can maximize your throughput capabilities for automated environments
- Optimized protocols, reagents, and intuitive software are available for the broadest range of applications
- Get improved well-to-well and instrument-to-instrument data accuracy with the Applied Biosystems™ OptiFlex™ System, featuring 6 decoupled excitation and emission filter channels, with 21 filter combinations for maximum multiplexing and chemistry flexibility

Find out more at [thermofisher.com/quantstudio6-7flex](http://thermofisher.com/quantstudio6-7flex)



## Applied Biosystems™ QuantStudio™ 6 Pro Real-Time PCR System

Offers exceptional qPCR performance and interchangeable blocks, now in a smaller footprint. Designed for ultimate ease of use, the system offers high quality, excellent reliability, and an optimal user experience for researchers who want to work smarter in the lab. With an option to upgrade to an Applied Biosystems™ QuantStudio™ 7 Pro Real-Time PCR System, the QuantStudio 6 Pro system is designed to evolve with your needs.

- Easy and convenient hands-free operation with facial authentication and voice commands
- Reduced errors and manual entries with smart qPCR workflow and TaqMan Array Plates with radio-frequency identification (RFID)
- Peace of mind with Smart Help and Smart Remote Support; contact Technical Support directly from the touchscreen or show issues directly to Technical Support for fast resolution
- Access, analyze, and share data anytime, anywhere with Connect, our cloud-based platform for real-time information access, secure data storage, and online results sharing
- Remotely monitor experiments and schedule runs using the Instrument Connect monitoring app

## QuantStudio 7 Pro Real-Time PCR System

Delivers a simple and powerful qPCR experience with proven reliability, sensitivity, and accuracy plus motorized interchangeable blocks for researchers who demand ultimate productivity. Run hundreds of real-time PCR reactions effortlessly using TaqMan Array Cards integrated with the Applied Biosystems™ Orbitor™ RS2 Microplate Mover. The QuantStudio 7 Pro system can maximize your throughput capabilities for automated environments.

- Have confidence in your records—built-in SAE package comes standard on the QuantStudio 7 Pro system to assist you in 21 CFR Part 11 compliance
- Reduced errors and manual entries with smart qPCR workflow and TaqMan Array Plates with RFID
- Deliver results faster with customizable analysis and QC settings, and automatic data transfer
- Enhanced OptiFlex System with white-light LED and 21 filter combinations for maximum multiplexing options
- Peace of mind with Smart Help and Smart Remote Support; contact Technical Support directly from the touchscreen or show issues directly to Technical Support for fast resolution

Find out more at [thermofisher.com/quantstudiopro](https://thermofisher.com/quantstudiopro)





## Digital PCR

### Applied Biosystems™ QuantStudio™ 12K Flex Real-Time PCR System

Designed for ultimate throughput, flexibility, and scalability, the QuantStudio 12K Flex system provides a single platform that enables you to perform targeted discovery through confirmation and screening, as well as many other applications.

- Platform runs 96-well, Fast 96-well, and 384-well plates, as well as TaqMan Array Card and OpenArray Plate formats
- Five interchangeable thermal cycling blocks enable 1–12,000 data points per run
- Enhanced OptiFlex System with white-light LED and 21 filter combinations for maximum chemistry options
- Advanced software for gene expression and miRNA profiling, genotyping, and dPCR

Find out more at [thermofisher.com/quantstudio12k](http://thermofisher.com/quantstudio12k)

### Need to extend the capabilities of real-time PCR?

Digital PCR is rapidly gaining traction as an alternative to conventional real-time PCR for detection and quantification of nucleic acid molecules without a standard curve. The capability of dPCR to accurately determine the concentration of rare targets has been the key driver of adoption, particularly for clinical research applications like liquid biopsy and cancer recurrence monitoring.

The simple and affordable Applied Biosystems™ QuantStudio™ 3D Digital PCR System produces absolute quantification data with the precision and sensitivity you need for your more demanding applications.

Find out more at [thermofisher.com/quantstudio3d](http://thermofisher.com/quantstudio3d)



## Real-time PCR software

A suite of data analysis software for the QuantStudio instrument family is available, enabling users to access and analyze their data for different applications anytime and anywhere, online or offline.

### Relative Quantification

The Relative Quantification app on Connect and Applied Biosystems™ ExpressionSuite™ Software allow fast and powerful gene expression analysis with enhanced visual capabilities for relative quantification, including integrated correlation and volcano and cluster analysis with the ability to drill down to amplification plots.

### Genotyping

The Genotyping app on Connect and Applied Biosystems™ TaqMan® Genotyper Software offer a state-of-the-art genotype-calling algorithm, an intuitive user interface, and enhanced multiplate analysis features. These tools can be used with TaqMan SNP Genotyping Assays (predesigned, custom, and DME) in combination with 48-, 96-, and 384-well microtiter plates and Applied Biosystems™ OpenArray™ Genotyping Plates.

### Standard Curve

The Standard Curve app on Connect offers reliable quantification of unknown quantities of genes and enables importing of standard curves from other experiments, providing analysis flexibility. Equivalent features are also available through the instrument desktop software.

### Presence/Absence Analysis

The Presence/Absence Analysis app on Connect analyzes and interprets real-time PCR data or post-read data to determine if a specific target sequence is present in a sample or not. It provides easy-to-view presence/absence results in a plate-grid view. Equivalent features are also available through the instrument desktop software.

### High Resolution Melt (HRM) Analysis

This High Resolution Melt (HRM) Analysis app on Connect and HRM Software are designed for post-PCR analysis to identify variation in nucleic acid sequences. The method is based on detecting small differences in PCR melting (dissociation) curves. It is enabled by bright dsDNA-binding dyes used in conjunction with Applied Biosystems™ real-time PCR instrumentation.

### Design and Analysis

The Design and Analysis app on Connect offers the ability to create, edit, and analyze qPCR instrument files. Equivalent features are also available through the instrument desktop software.

### hPSC Scorecard Analysis

The hPSC Scorecard Analysis app on Connect scores gene expression profiles generated using the Applied Biosystems™ TaqMan® hPSC Scorecard Panel compared to a reference set of well-characterized pluripotent stem cell (PSC) lines. It provides raw data as well as box plots, heat maps, and correlation plots for export.

### Applied Biosystems™ CopyCaller™ Software

CopyCaller Software is a free, easy-to-use software package for assigning target copy number based on data generated using TaqMan Copy Number Assays.

## Data analysis software

### **Applied Biosystems™ qPCR analysis modules**

A fast, powerful, flexible online data analysis solution that contains analysis options for relative quantification (also known as the comparative  $C_t$  method), absolute quantification, HRM, and genotyping. These modules offer increased capacity to analyze data, and flexible features beyond our existing software solutions.

### **ExpressionSuite Software**

ExpressionSuite Software is a free, easy-to-use data analysis tool that utilizes the comparative  $C_t$  ( $\Delta\Delta C_t$ ) method to rapidly and accurately quantify relative gene expression across a large number of genes and samples.

### **CopyCaller Software**

CopyCaller Software is a free, easy-to-use software package for assigning target copy number based on data generated using TaqMan Copy Number Assays.

### **High Resolution Melt (HRM) Software**

HRM is a post-PCR analysis method used to identify variation in nucleic acid sequences. This software is a part of Applied Biosystems™ qPCR Analysis Modules.

### **TaqMan Genotyper Software**

For use with TaqMan SNP Genotyping Assays (predesigned, custom, and DME) in combination with 48-, 96-, and 384-well microtiter plates and OpenArray Genotyping Plates. It offers a state-of-the-art genotype-calling algorithm, an intuitive user interface, and enhanced multiplate analysis features.

Find out more at [thermofisher.com/pcrdata](http://thermofisher.com/pcrdata)

# applied biosystems

## Real-time PCR plastics

### **Applied Biosystems™ MicroAmp™ plastics**

Designed and verified to work with Applied Biosystems™ real-time PCR systems for optimal fit and performance. Thin-walled polypropylene wells provide optimal heat transfer, and raised well rims ensure effective sealing to reduce cross-contamination. MicroAmp PCR plastics are certified to be free of DNA, RNases, and PCR inhibitors.

### **Applied Biosystems™ MicroAmp™ EnduraPlate™ plastics**

MicroAmp EnduraPlate plastic consumables are constructed with a durable polycarbonate frame (hard shell) for mechanical stability and flatness, even after thermal cycling. They meet the American National Standards Institute (ANSI) and Society of Biomolecular Screening (SBS) standards for use with robotic handling. These plates are available in a variety of colors with black text for easy-to-read well identification.

Find out more at [thermofisher.com/pcrplastics](https://thermofisher.com/pcrplastics)

Find out more at [thermofisher.com/qpcr](https://thermofisher.com/qpcr)

**ThermoFisher**  
SCIENTIFIC

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