

# 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 qPCR workflow needs. Whether you're doing sample preparation, reverse transcription, amplification and detection using Applied Biosystems™ TaqMan™ or Applied Biosystems™ SYBR™ 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 service 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 removal and reverse transcription.

### **Ambion™ 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 (<200bp), 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) laser-capture microdissected (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**

Offers a streamlined protocol for performing TaqMan chemistry-based genotyping analysis on any sample.

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

Designed for rapid purification of high-quality genomic DNA from a variety of sample types, including blood and blood cards, tissue, mouse tails, buccal swabs, buffy coats and cultured cells.

## TaqMan Assays by application



### Gene expression analysis

Applied Biosystems™ TaqMan™ Gene Expression Assays offer 1.3 million primer/probe sets for 24 species and selected pathogens, with your choice of Applied Biosystems™ FAM™ or VIC™ dye labels.

Applied Biosystems™ Custom Plus Assay kits and standard custom assay kits enable you to study the expression of any gene or splice variant in any organism.



### Drug metabolism genotyping

Choose from over 2,700 unique Applied Biosystems™ TaqMan™ Drug Metabolism SNP Genotyping Assays to detect polymorphisms in all known high-value DME pharmacogenetic markers, including pharmaADME core markers.



### SNP genotyping

Choose from 7 million predesigned human and mouse Applied Biosystems™ TaqMan™ SNP Genotyping Assays, or Applied Biosystems™ TaqMan™ Custom SNP Genotyping Assays, in various sizes.



### Protein expression

Revolutionary 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.

### Choice of formats

Applied Biosystems™ TaqMan™ Assays are available in single-tube format 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 help to minimize human error; 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 panels, flexible-content panels or custom options to design your panel.



### MicroRNA and noncoding RNA analysis

Innovative Applied Biosystems™ TaqMan™ Assay-based products and related tools, for miRNA and noncoding RNA research from isolation through discovery.

- Long noncoding RNA (lncRNA) quantification.
- miRNA profiling.
- pri-miRNA quantification.
- Small RNA quantification.
- Targeted miRNA quantification.
- Applied Biosystems™ TaqMan™ MicroRNA Assays using miRNA-specific RT primer.
- Applied Biosystems™ TaqMan™ Advanced miRNA Assays using universal RT primer.



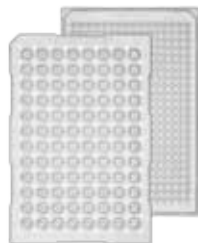
### Somatic mutation detection

In addition, our Applied Biosystems™ Custom TaqMan™ Assay Design Tool lets you design and order a TaqMan Assay for gene expression or genotyping applications. Custom assay design services are available for any other design request.

For more information, go to [thermofisher.com/taqman](http://thermofisher.com/taqman)



Single-tube assays



TaqMan Array Plates  
(96- and 384-well)



TaqMan Array Cards



OpenArray Plates

## **Applied Biosystems™ TaqMan™ Multiplex qPCR Solution**

Multiplex qPCR is a simple, efficient and cost-effective solution for overcoming the challenges of limited samples and costly analysis. Our TaqMan Multiplex Solution consists of an Applied Biosystems™ TaqMan™ custom probe with QSY™ quencher, ABY™ and JUN™ dyes, and an optimized Applied Biosystems™ TaqMan™ Multiplex qPCR Master Mix using MUSTANG PURPLE™ dye as a passive reference. This solution enables you to perform up to a 4-plex reaction for gene expression and a duplex reaction for genotyping analysis on an Applied Biosystems™ real-time PCR instrument.

Learn more at [thermofisher.com/multiplexqpcr](https://www.thermofisher.com/multiplexqpcr)

## Reverse transcription

### **Invitrogen™ SuperScript™ VILO™ cDNA Synthesis Kit**

Provides high-quality reverse transcription, a streamlined workflow with maximum sensitivity and dynamic range.

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

Provides universal RT chemistry to prepare cDNA template for use with TaqMan™ Advanced miRNA Assays.

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

Contains components for optimal performance of TaqMan MicroRNA Assays. Contents of this kit are used with the RT primer provided with the TaqMan MicroRNA Assay to convert miRNA to cDNA.

## Master mixes for real-time PCR amplification

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

Superior performance for both routine and challenging real-time PCR experiments, which can be used in both standard and fast reactions and has excellent benchtop stability.

### **Applied Biosystems™ TaqMan™ Universal Master Mix II**

Brings sensitivity and precision across a broad range of input target quantities, reliable detection of low copy number targets and accurate quantification to discriminate subtle differences in target abundance.

### **Applied Biosystems™ TaqMan™ PreAmp Master Mix**

Preamplifies small amounts of cDNA without introducing amplification bias to the sample and stretches precious sample into many more real-time PCR reactions.

### **Applied Biosystems™ TaqMan™ Genotyping Master Mix**

Obtain superior cluster resolution for clear SNP allelic discrimination. Optimized for endpoint fluorescence detection in genotyping applications.

### **Applied Biosystems™ TaqMan™ Multiplex Master Mix**

TaqMan Multiplex Master Mix is formulated to amplify up to four targets in a single reaction, delivering shorter run times.

### **Applied Biosystems™ PowerUp™ SYBR™ Green Master Mix**

Formulated for maximum specificity and reproducibility. The proprietary Dual-Lock™ Taq DNA Polymerase enzyme uses a combination of two hot-start mechanisms to control its activity. Tight reproducibility over a broad dynamic range. Compatible with fast or standard cycling. One universal master mix for all qPCR instruments.

### **Applied Biosystems™ Power SYBR™ Green Master Mix**

Superior sensitivity and reproducibility without compromising performance across all real-time PCR systems.

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

Designed for reliable, highly sensitive DNA and RNA virus detection in commonly used sample types, even in the presence of common reaction inhibitors. A single-tube format allows for uniform handling and processing.

## Real-time PCR systems

### **QuantStudio™ 3 Real-Time PCR System**

A small, affordable solution connecting you to your data like never before. Designed to be the easiest to use and most interactive instrument, offering the high performance analysis 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.
- Directly connect to Thermo Fisher Cloud 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 three 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 giving you greater control of your experimental data. Interact with the latest advancements in touch-screen usability, access your data more easily than ever before and securely share your results with collaborators around the world.

- Multiplex with ease — six excitation filters and six emission filters offer 21 different color combinations, allowing a broad range of detection chemistries and maximum multiplexing.†

### **Applied Biosystems™ TaqMan™ Protein Assay Core Reagents Kit with Master Mix**

Performs ligation and PCR steps for protein expression.

- Directly connect to Thermo Fisher Cloud 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 six 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 control your runs.

†384-well format includes 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 upgradable path 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 touch-screen 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 10-log dynamic range.
- 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 quantitative PCR applications.

- Run hundreds of real-time PCR reactions effortlessly using TaqMan Array Cards integrated with the 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 OptiFlex™ System, featuring six decoupled excitation and emission filter channels, with 21 filter combinations for maximum multiplexing and chemistry flexibility.

## Free data analysis software

### **Applied Biosystems™ qPCR Analysis Modules**

A fast, powerful, flexible online data analysis solution that contains analysis module options for comparative  $C_t$  (also known as relative quantification), absolute quantification and genotyping. Applied Biosystems qPCR Analysis Modules offer increased analysis capacity and flexible features above our existing software solutions.

### **DataAssist™ Software**

An 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.

### **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 one to 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 microRNA profiling, genotyping and digital PCR.

Find out more at

[thermofisher.com/quantstudioqpcrfamily](http://thermofisher.com/quantstudioqpcrfamily)

### **Applied Biosystems™ 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 Applied Biosystems™ OpenArray™ Genotyping Plates. It offers a state-of-the-art genotype-calling algorithm, an intuitive user interface and enhanced multi-plate analysis features.

## Digital PCR

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

Digital PCR is a new approach to nucleic acid detection and quantification that uses molecular counting. It offers an alternate method to conventional real-time quantitative PCR for absolute quantification and rare-allele detection without the use of a standard curve.

A simple and affordable platform, the 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)

For more details about all these products and more, go to [\*\*thermofisher.com/taqman\*\*](http://thermofisher.com/taqman)

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