applied biosystems

# TaqMan Gene Expression Assay solutions

Proven performance for fast, reliable results

ThermoFisher SCIENTIFIC

# The leader in gene expression analysis

We are the leader in gene expression analysis, providing world-class sample preparation with Applied Biosystems™ technologies, real-time PCR using Applied Biosystems™ TaqMan™ or Applied Biosystems™ SYBR™ Green chemistry, and industry-leading real-time PCR instruments and data analysis software.

Applied Biosystems™ TaqMan™ assay technology is the gold standard in performance, quality, and content for gene expression analysis. Developed using long-standing bioinformatic expertise in primer and probe design, and stringent testing across applications and integrated platforms, TaqMan Assays provide you with the most reliable and robust real-time PCR solutions.

With over one and a half million predesigned and preoptimized assays across a growing list of model species, a wide range of formats to scale to your needs, and a robust manufacturing quality system, we have a complete suite of solutions that will enable you to get fast, reliable, and accurate gene expression results.

# Contents

# TaqMan Gene Expression Assays

## Proven 5´ nuclease–based real-time PCR chemistry

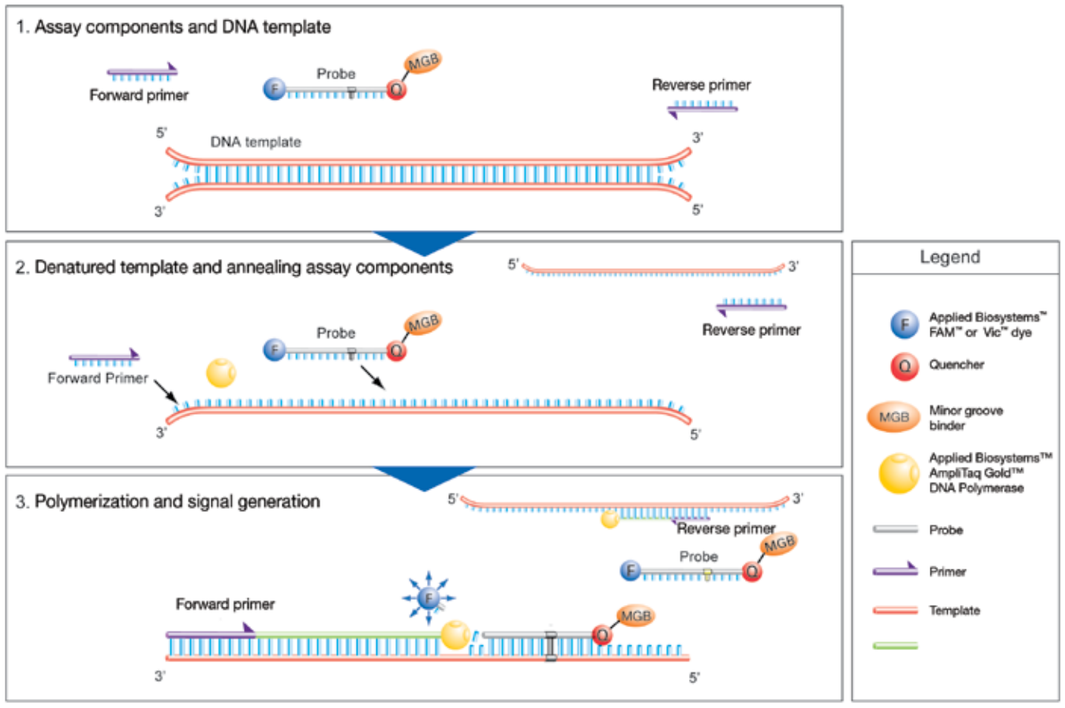
**Get results you can trust**

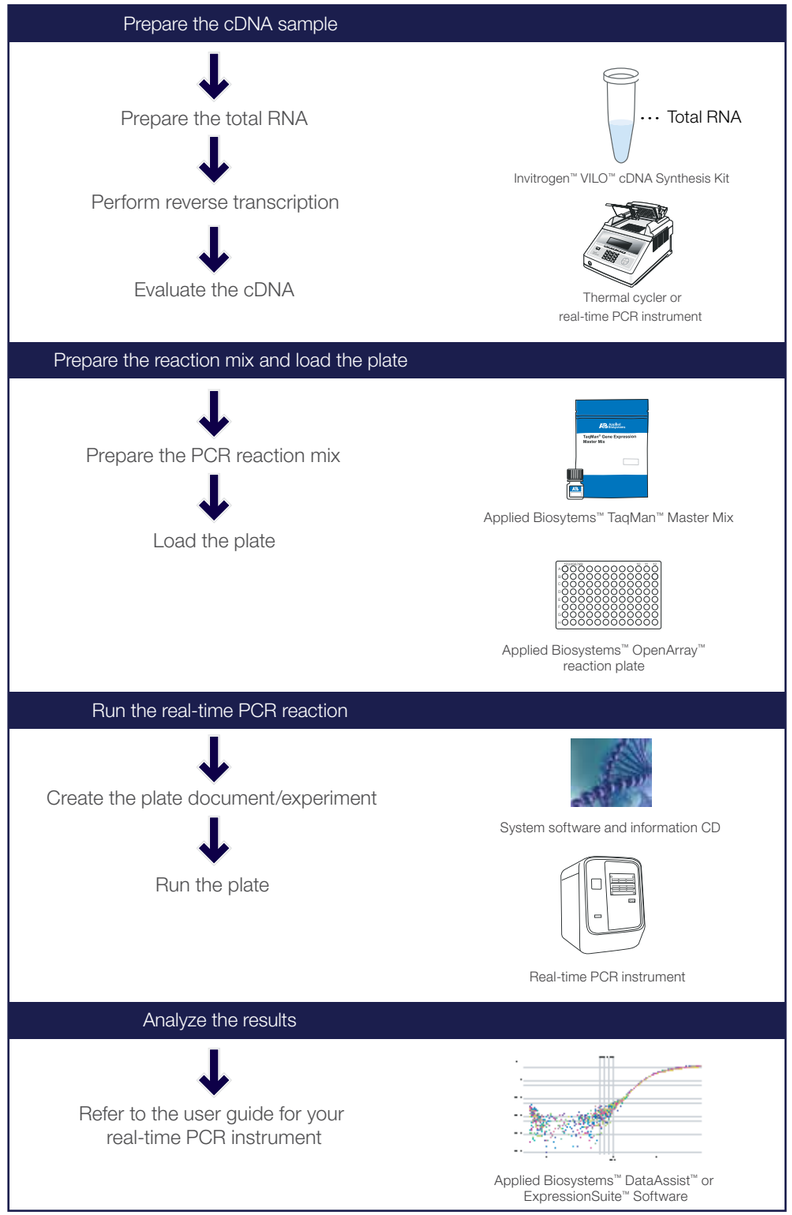
TaqMan Gene Expression Assays are referenced in tens of thousands of publications and are considered the gold standard for gene expression quantification by scientists around the world.

**TaqMan Gene Expression Assays** are based on 5´ nuclease chemistry, and each assay contains the primer and probe set for your target of interest. Here's how an assay works (Figures 1 - 3):

1. At the start of the real-time PCR reaction, the temperature is raised to denature the double-stranded cDNA. During this step, the signal from the fluorescent dye on the 5´ end of the Applied Biosystems™ TaqMan™ probe is quenched by the MGB–nonfluorescent quencher on the 3´ end of the probe.
2. In the next step, the reaction temperature is lowered to allow the primers and probe to anneal to their specific target sequences.
3. Taq polymerase synthesizes a complementary DNA strand using the unlabeled primers and template. When the polymerase reaches the TaqMan probe, its endogenous 5´ nuclease activity cleaves the probe, separating the dye from the quencher.

With each cycle of PCR, more dye molecules are released, resulting in an increase in fluorescence intensity proportional to the amount of amplicon synthesized.



# The largest selection of predesigned assays

## Spend time on results, not assay design and optimization

**With TaqMan predesigned assays, spend your time generating results, not designing and optimizing assays.**

- Detect virtually any gene product—more than 1.5 million predesigned assays, and custom design for everything else
- Assays for nearly every human, mouse, and rat gene in the RefSeq database
- Available for 25 species, and some pathogens
- Assays for multiple locations per transcript and across nearly every exon junction in human
- Strain-neutral assays for mouse and rat

To learn more and order, go to **thermofisher.com/taqmangex**

- Not finding what you're looking for in our predesigned assay collection? The Applied Biosystems™ Custom TaqMan™ Assay Design Tool lets you design and order a TaqMan Assay to detect any gene from any organism. Design and order your assays at **thermofisher.com/cadt** Custom TaqMan Assays are typically delivered in 5–12 business days.
- Also, try Applied Biosystems™ TaqMan™ Endogenous Controls—a collection of TaqMan Assays targeting commonly used control gene products for sample input normalization in real-time PCR.

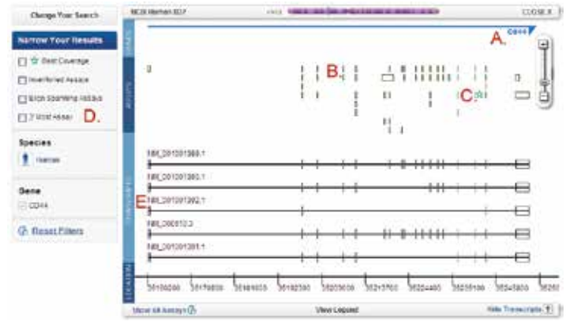
**Predesigned TaqMan Gene Expression Assays**
(as of November 2015)

| Species | Number of assays | Gene coverage (%)* |
|---|---|---|
| Human *(H. sapiens)* | 205,707 | 99.8% |
| Mouse *(M. musculus)* | 176,510 | 99.5% |
| Chinese hamster *(C. griseus)* | 154,743 | 88.2% |
| Rat *(R. norvegicus)* | 146,589 | 89.2% |
| Cow *(B. taurus)* | 103,562 | 99.6% |
| Rice *(O. sativa)* | 99,822 | 95.6% |
| Arabidopsis *(A. thaliana)* | 97,879 | 93.8% |
| Nematode *(C. elegans)* | 92,687 | 95.1% |
| Rhesus monkey *(M. mulatta)* | 69,310 | 55.8% |
| Zebrafish *(D. rerio)* | 63,712 | 77.3% |
| Frog *(X. tropicalis)* | 56,764 | 87.3% |
| Dog *(C. familiaris)* | 55,558 | 64.3% |
| Chicken *(G. gallus)* | 48,432 | 85.1% |
| Fruit fly *(D. melanogaster)* | 41,607 | 94.0% |
| Sweet corn *(Z. Mays)* | 38,493 | 59.5% |
| Cynomolgus monkey *(M. fascicularis)* | 37,652 | 80.5% |
| Pig *(S. scrofa)* | 16,247 | 90.3% |
| Fission yeast *(S. pombe)* | 6,538 | 94.3% |
| Rabbit *(O. cuniculus)* | 5,927 | 80.9% |
| Baker's yeast *(S. cerevisiae)* | 5,524 | 93.4% |
| Horse *(E. caballus)* | 3,891 | 72.8% |
| Soybean *(G. max)* | 3,456 | 13.5% |
| Guinea pig *(C. porcellus)* | 2,037 | 64.3% |
| Grape *(V. vinifera)* | 965 | 25.3% |
| *Wheat (T. aestivum)* | 760 | 43.6% |
| **Summary** | **1,534,372** | **81.1%, 25 species** |

*Percent coverage refers to genes in the RefSeq database.

**There are multiple assays for my gene product. How do I choose the right one?**

Genomic alignment maps on our website make it easy to see exactly what gene products are detected and how they align to the genomic locus. The top of the map shows the target gene. Below it, all TaqMan Gene Expression Assays for target gene products are shown relative to the genomic locus map. The known transcripts from the locus are shown below, with their RefSeq accession numbers.




**A.** Gene symbol

**B.** Alignment of TaqMan amplicons to the gene. Hover over an assay to see its name and assay number as well as the transcripts it detects. Click on an assay to open an assay details pane for more information and to add the assay to your shopping cart.

**C.** Assays providing the best coverage are marked with a star symbol.

**D.** Narrow your results by specifying the type of assay you need.

**E.** All RefSeq transcripts that map to the gene locus, showing exon usage


**The TaqMan Assays qPCR guarantee**

We stand behind every predesigned TaqMan Assay. We are committed to helping you achieve your research goals and believe our predesigned TaqMan primer and probe sets establish the benchmark for high-quality and easy-to-use real-time PCR products.

We want you to be happy with your purchase and confident in the genomic tools we provide. Therefore, we guarantee every TaqMan Assay in terms of:

- **Quality**—high-quality manufacturing for reproducible results from lot to lot
- **Performance**—superior sensitivity, specificity, and accuracy
- **Content**—the largest collection of primer and probe sets using the world's best and most extensively validated assay design pipeline
- **Results**—enables you to obtain data you can trust

If you are not satisfied with the performance of a predesigned TaqMan Assay, we'll replace it at no cost or credit your account. For more information, and to see the full terms and conditions of the guarantee, go to **thermofisher.com/taqmanguarantee**

# Proven performance

## Reliable reagents for confidence in your results

### TaqMan MGB probes bind more tightly—shorter, more specific probes

TaqMan probes include an MGB moiety at the 3′ end that increases the $T_m$ of the probe and stabilizes probe–target hybrids. This means that TaqMan probes can be significantly shorter than traditional probes, providing better sequence discrimination and flexibility to accommodate more targets.

### Nonfluorescent quencher (NFQ) maximizes sensitivity

TaqMan probes incorporate an NFQ to absorb (quench) signal from the fluorescent FAM or VIC dye label at the other end of the probe. The properties of the NFQ combined with the short length of MGB probes result in lower background signal than with non-MGB/NFQ probes. Lower background noise results in increased sensitivity and precision in your data.

**TaqMan probe outperforms non-MGB probe in real-time PCR**

| | $C_t$ | | Standard deviation | |
|---|---|---|---|---|
| Input | TaqMan Assay | Non-MGB assay | TaqMan Assay | Non-MGB assay |
| 10 ng | 9.72 | 13.35 | 0.02 | 0.15 |
| 1 ng | 13.36 | 16.82 | 0.04 | 0.18 |
| 0.1 ng | 16.76 | 20.23 | 0.07 | 0.13 |
| $10^{-2}$ ng | 20.19 | 23.72 | 0.04 | 0.13 |
| $10^{-3}$ ng | 23.64 | 27.31 | 0.03 | 0.10 |
| $10^{-4}$ ng | 27.01 | 30.66 | 0.04 | 0.12 |
| $10^{-5}$ ng | 30.24 | 32.82 | 0.13 | 0.19 |

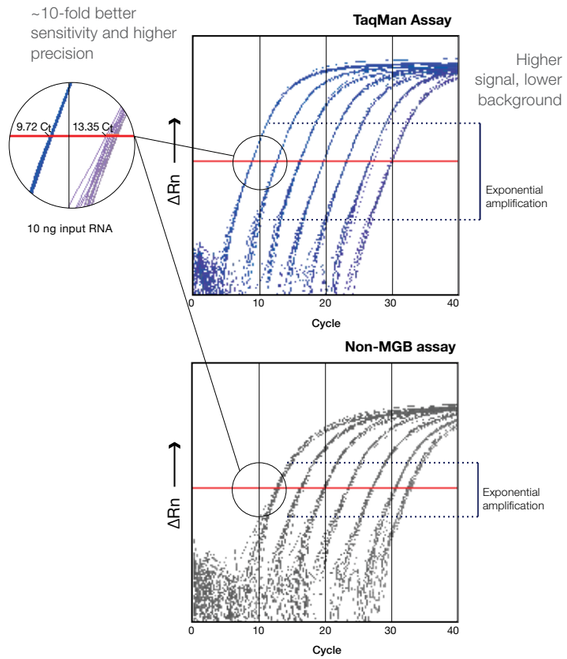



**Figure 2. TaqMan probes provide better sensitivity and precision.** Comparison of two 5′ nuclease PCR assays for 18S rRNA. Ten-fold dilutions of Universal Human Reference RNA (10–$10^{-5}$ ng) were prepared and analyzed in 11 replicate real-time PCR reactions using either the TaqMan Gene Expression Assay (FAM dye–labeled, with NFQ) or the non-MGB assay (FAM dye–labeled, with BHQ). Real-time PCR was run according to the respective manufacturers' recommended conditions. Across a 6-log range of input template, the TaqMan Assay displayed earlier $C_t$ values and better reproducibility across all data points. In addition, the TaqMan Assay had higher signal and lower background, resulting in better sensitivity and higher precision.



- **Specificity:** Advanced primer/probe sequence selection criteria plus MGB probe enhancement deliver the specificity and reproducibility you need for confidence in your results. Your results are generated from amplification of the intended target, not from nonspecific dye binding or amplification of closely related genes or pseudogenes.
- **Sensitivity:** The NFQ on TaqMan probes minimizes background, and intelligent PCR primer and probe design maximizes amplification efficiency. Get better sensitivity and accuracy—reliably detect targets present at 10 or fewer copies.
- **Reproducibility:** Accurately reproduce results from well to well, day to day, and lab to lab—even across manufacturing lots.
- **Wide dynamic range:** Detect from a handful to millions of target molecules with the same reaction setup. Capture the full spectrum of expression variability in virtually any experimental scenario.
- **High amplification efficiency:** All TaqMan Gene Expression Assays have a PCR efficiency of 100% (±10%). Use the comparative $C_t$ ($\Delta\Delta C_t$) method of quantification confidently.
- **Ease of use:** All assays use a single, universal thermal cycling profile. Run any assay combination on a single plate. Avoid instrument-programming errors.
- **Comprehensive assay information:** Genomic mapping data are provided prior to purchase.

### Detect as few as 10 target molecules with high sensitivity and large dynamic range

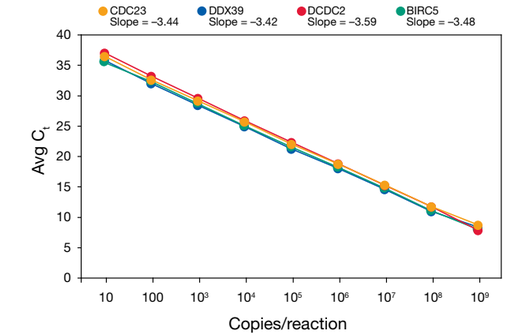



**Figure 3. Sensitivity and wide dynamic range.** Sequential 10-fold dilutions of synthetic sense RNA corresponding to 4 gene products—CDC23, DDX39, DCDC2, and BIRC5—were added to a background of yeast RNA to evaluate the sensitivity and dynamic range of TaqMan Gene Expression Assays. Samples containing 50 to 5 x 109 target molecules were reverse transcribed, and 20% of each RT reaction was used in quadruplicate PCR reactions using TaqMan Gene Expression Master Mix. Reactions containing as few as 10 copies were detected ($C_t$ ~35).

### Reproducible quantification with virtually 100% amplification efficiency

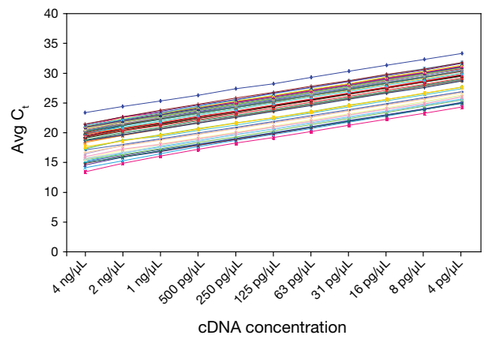



**Figure 4. Reliable performance and wide dynamic range.** TaqMan Gene Expression Assays were used to analyze expression of 60 targets across a 2-fold dilution series of universal reference cDNA, from 4 ng/µL to 4 pg/µL. The average slope of the lines is 1.02. TaqMan Assays exhibit virtually 100% amplification efficiency at each cycle of PCR: each target molecule is copied, doubling the fluorescence signal.

## Specificity for your mRNA target

**TaqMan Assay design helps ensure target mRNA specificity: readily distinguish even highly homologous sequences**

Specificity is built into the TaqMan Assay design pipeline. As a result, assays detect only their intended targets. Even TaqMan Gene Expression Assays for members of highly homologous gene families typically amplify their targets with $C_t$ values at least 10 cycles earlier than the closest homolog, or with at least 1,000-fold discrimination if equal numbers of the two targets are present.

**TaqMan Gene Expression Assays are designed to detect only their intended targets, easily discriminating among highly homologous sequences.**

**HOX gene family members *HOXA10*, *HOXC10*, and *HOXD10* share ~80% sequence homology**


| Gene | RefSeq ID | TaqMan Assay ID | Homology |
|---|---|---|---|
| *HOXA10* | NM_018951.3 | Hs00172012_m1 | — |
| *HOXC10* | NM_017409.3 | Hs00213579_m1 | 81% |
| *HOXD10* | NM_002148.3 | Hs00157974_m1 | 79% |

**Clear gene expression results for HOX gene family members**

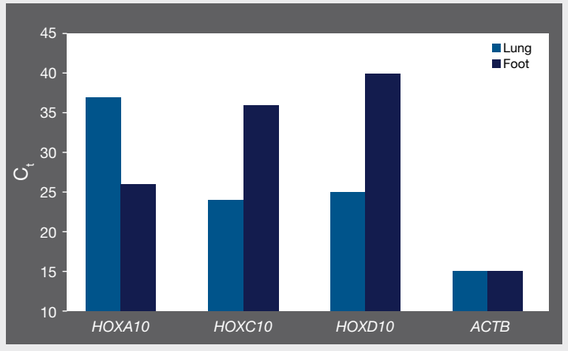



**Figure 5. TaqMan Gene Expression Assays detect only their intended targets, even among the highly homologous HOX gene family members.** In vertebrates, as in *Drosophila*, location-appropriate expression of members of the HOX gene family is essential for normal embryogenesis. Tissue-specific expression of 3 closely related HOX genes, comparable to published data, was easily detected using TaqMan Gene Expression Assays.



## Advanced bioinformatics

TaqMan Gene Expression Assays are designed using our sophisticated design pipeline that has been stringently validated by functionally testing more than 18,000 assays (a statistically significant subset). Since then, our customers have consistently confirmed through their own validation experiments that TaqMan Gene Expression Assays enable reliable, reproducible results.

This process is used to design all TaqMan Gene Expression Assays, including inventoried assays, made-to-order assays, and Applied Biosystems™ Custom Plus assays. We offer ~73,000 inventoried assays and over 1.5 million made-to-order assays, which are manufactured when an order is placed. Applied Biosystems™ Custom Plus TaqMan™ RNA Assays are ideal for newly identified genes and specific splice variants, and offer the same performance as predesigned TaqMan Assays.

**TaqMan Assay design and manufacture**

**Target selection**
mRNA sequences (NCBI)

**Preprocessing**
–Map to genome
–Mask SNPs, repeats, and discrepancies
–Identify exon–exon junction

**Assay design**
Thermodynamic and chemistry parameters
–Balance $T_m$ for universal thermal cycling
–Avoid secondary structure, optimize GC content
–Optimize amplicon size
–Eliminate primer-dimer formation

***In silico* QC**
–Score assays for target specificity
–Score assays for genome specificity

**Assay selection**
High-quality TaqMan Gene Expression Assays

**Perform stringent assay formulation QC**

**Confirm oligo identity by mass spectrometry**

**Online ordering**

# Flexible formats

## A variety of formats for different research needs

### Configurations to fit your research goals

Are you analyzing hundreds (or thousands) of samples, and expression from a handful of genes? Or does your research involve a few samples that need to be analyzed for a long list of mRNA targets? No matter what experiment you are performing, there is a TaqMan Gene Expression Assay format and real-time PCR instrument for your research needs.

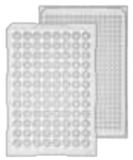
**TaqMan Gene Expression Assay formats**

**Single tubes**

- Low entry price
- Flexible
- Run on any real-time PCR instrument

**384-well microfluidic cards**

- Low cost per reaction
- Optimal for medium to large projects
- Run on Applied Biosystems™ QuantStudio™ 7 & 12K Flex, ViiA™ 7, and 7900HT Real-Time PCR Systems



**96- or 384-well plates**

- Optimal for small to medium projects
- Balances flexibility with streamlined reaction setup
- Run on any 96- or 384-well real-time PCR instrument

**OpenArray plates**

- Lowest cost for large projects
- Ultimate throughput
- Run on QuantStudio 12K Flex Real-Time PCR System

### TaqMan Gene Expression Assays (single tubes)

Predesigned assays come in four different sizes so that you can order only the number of assays appropriate for your research. In addition, for made-to-order assays in small, medium, and large sizes, you can choose FAM or VIC dye labeling, and non–primer-limited or primer-limited formulation. (Extra small assays are only available with FAM dye labels.)

For more information, go to **thermofisher.com/allgenes**

| Size | No. of reactions* | Concentration | Reporter dye | Cat. No. |
|---|---|---|---|---|
| Extra small (inventoried)† | 75 | 20X | FAM | 4453320 |
| Extra small (made-to-order)‡ | 75 | 20X | FAM | 4448892 |
| Small (inventoried)† | 250 | 20X | FAM | 4331182 |
| Small (made-to-order)‡ | 360 | 20X | FAM or VIC | 4351372, 4448489 (VIC) 4448484 (VIC-PL**) |
| Medium (made-to-order)‡ | 750 | 20X | FAM or VIC | 4351370, 4448490 (VIC) 4448485 (VIC-PL**) |
| Large (made-to-order)‡ | 2,900 | 60X | FAM or VIC | 4351368, 4448491 (VIC) 4448486 (VIC-PL**) |

*Reaction number is based on 20 µL reaction size.
**Primer-limited.
† Inventoried assays are typically delivered in 1–4 business days.
‡ Made-to-order assays are typically delivered in 5–12 business days.

### Applied Biosystems™ TaqMan™ Arrays: 96-well plates or 384-well microfluidic cards

- Configure a Custom TaqMan Array containing inventoried predesigned assays, or select from our gene signature assay collections
- TaqMan Gene Expression Assays are loaded into one of two TaqMan Array formats: 96-well plates (Fast or standard) or 384-well microfluidic cards

(To include made-to-order or custom assays on your plate or card, order using our Applied Biosystems™ TaqMan™ Custom Plating Service, or contact your sales representative for other options.)

### Custom TaqMan Array 96-well plates

- Choose any inventoried TaqMan Gene Expression Assay
- 6-plate minimum order
- Choose standard (20 µL rxn) or Fast (10 µL rxn) format

Typically delivered in 4–14 business days

To learn more and order, go to **thermofisher.com/arrayplates**

| Assays + controls | Assay replicates | Samples per plate | Name | Cat. No. (standard) | Cat. No. (Fast) |
|---|---|---|---|---|---|
| 95 + 1* | 1 | 1 | Format 96 | 4391524 | 4413255 |
| 92 + 4** | 1 | 1 | Format 96 + | 4391525 | 4413256 |
| 47 + 1* | 2 | 1–2 | Format 48 | 4391526 | 4413257 |
| 44 + 4** | 2 | 1–2 | Format 48 + | 4391527 | 4413258 |
| 31 + 1* | 3 | 1–3 | Format 32 | 4391528 | 4413259 |
| 28 + 4** | 3 | 1–3 | Format 32 + | 4391529 | 4413260 |
| 15 + 1 | 6 | 1–6 | Format 16 | 4413264 | 4413261 |
| 12 + 4 | 6 | 1–6 | Format 16 + | 4413265 | 4413262 |
| 7 + 1 | 12 | 1–12 | Format 8 | 4413266 | 4413263 |

*Available with one manufacturing control assay for 18S ribosomal RNA. These formats are required for plates with assays for rhesus, canine, or a mixture of species.
**Includes the manufacturing control assay for 18S ribosomal RNA, plus assays for 3 additional candidate endogenous control genes: *GAPDH*, *HPRT1*, and *GUSB*, appropriate for human, mouse, or rat sample analysis.

## Custom TaqMan Array 384-well microfluidic cards

- Choose any inventoried TaqMan Gene Expression Assays
- 10-card minimum order
- Run on the QuantStudio 7 & 12K Flex, ViiA 7, and 7900HT Fast Real-Time PCR Systems
- No robotics required: cards have 8 sample-loading ports, each connected to 48 wells containing dried-down TaqMan Assays
- 1 µL reactions (2 µL including channel filling and overage)
- Typically delivered in 3–4 weeks

To learn more and order, go to **thermofisher.com/arraycards**

| Assays + controls* | Assay replicates | Samples per card | Name | Cat. No. |
|---|---|---|---|---|
| 11 + 1 | 4 | 8 | Format 12 | 4342247 |
| 15 + 1 | 3 | 8 | Format 16 | 4346798 |
| 23 + 1 | 2 (or 4) | 8 (or 4) | Format 24 | 4342249 |
| 31 + 1 | 3 | 4 | Format 32 | 4346799 |
| 47 + 1 | 1 (or 2) | 8 (or 4) | Format 48 | 4342253 |
| 63 + 1 | 3 | 2 | Format 64 | 4346800 |
| 95 + 1 | 1 (or 2) | 4 (or 2) | Format 96a | 4342259 |
| 95 + 1 | 2 (or 4) | 2 (or 1) | Format 96b | 4342261 |
| 191 + 1 | 2 | 1 | Format 192 | 4346802 |
| 380 + 4 | 1 | 1 | Format 384 | 4342265 |

*These arrays are available with one manufacturing control assay for 18S ribosomal RNA.

## Applied Biosystems™ TaqMan™ Array Gene Signature Plates and Cards

- Predesigned, preloaded TaqMan Assays for gene products specific to pathways, biomarkers, or disease target classes to facilitate drug discovery and disease research
- Endogenous control panels are also available to identify the best housekeeping gene products for your research
- Gene signature plates are typically delivered in 5–10 business days, and gene signature cards in 1–4 business days

Here is a sampling of what's available:

– Apoptosis

– Endogenous controls

– Cancer

– Immune system and inflammation

– Cell cycle proliferation and regulation

– Neurology

– Development and stem cells

– Signal transduction

– ECM matrix and adhesion

– Toxicology and drug metabolism

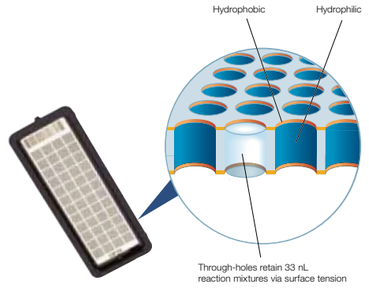
To see the complete collection of 96-well gene signature plates, go to **thermofisher.com/signatureplates**
To see the collection of 384-well gene signature microfluidic cards, go to **thermofisher.com/signaturecards**

## OpenArray Real-Time PCR Plates

- TaqMan Assays loaded and dried down into the 3,072 through-holes on OpenArray Real-Time PCR Plates
- Process up to 576 samples to obtain over 43,000 data points, with a single operator in an 8-hour day, without the use of robotics
- For use with the QuantStudio 12K Flex Real-Time System with an Applied Biosystems™ OpenArray™ block configuration and supporting reagent kits only
- OpenArray plates with inventoried assays are typically delivered in 4–5 weeks, and within 5–6 weeks for custom assays

To learn more about OpenArray technology on the QuantStudio 12K Flex system,go to **thermofisher.com/openarray**

| Assays + controls | Assay replicates | Samples per plate | Name | Cat. No. |
|---|---|---|---|---|
| 18 | 3 | Up to 48 | Format 18 | 4471124 |
| 56 | 1 | Up to 48 | Format 56 | 4471125 |
| 112 | 1 | Up to 24 | Format 112 | 4471126 |
| 168 | 1 | Up to 16 | Format 168 | 4471127 |
| 224 | 1 | Up to 12 | Format 224 | 4471128 |




## TaqMan Custom Plating Service: 96- or 384-well plates

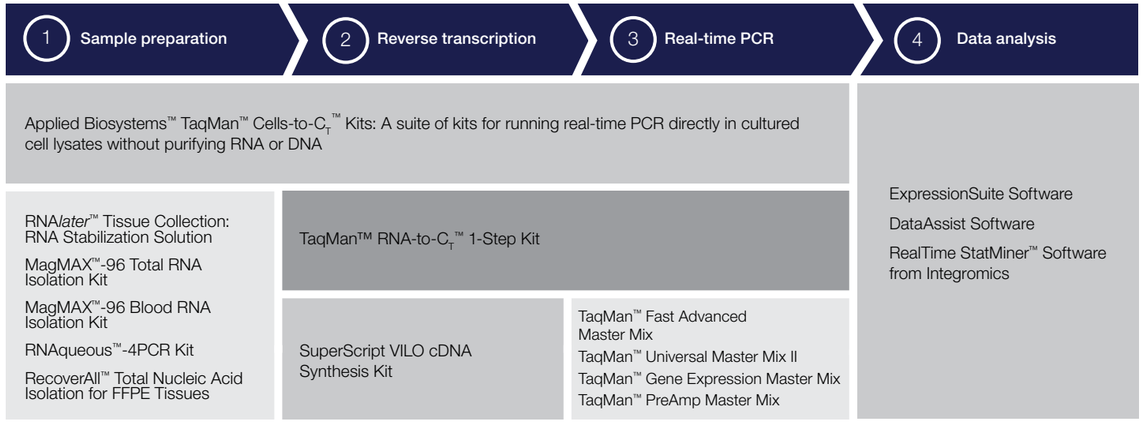
Configure 96- or 384-well plates with any TaqMan Gene Expression Assays, including custom assays designed to your target sequences and made-to-order assays.

- Set up custom configurations of any TaqMan Assays, including inventoried, made-to-order, custom, or Custom Plus gene expression assays or custom TaqMan probes and primers
- Choose 96- or 384-well plate, and Fast or standard format
- Receive in dried-down or liquid formulation
- Typically delivered in 2–5 weeks

# Complementary reagents

## Everything you need for reliable results

We provide everything you need for real-time PCR analysis, starting with isolating RNA from virtually any sample type, to reverse transcription into cDNA, optional preamplification to stretch small samples for analysis of many gene products, and of course, real-time PCR data analysis.




# TaqMan chemistry vs. SYBR Green chemistry for real-time PCR

We offer two types of chemistries to detect PCR products using real-time PCR instruments:

- TaqMan Assay chemistry (also known as “fluorogenic 5´ nuclease chemistry”)
- SYBR Green I dye chemistry

| | TaqMan Assay–based detection | SYBR Green–based detection |
|---|---|---|
| Overview | Uses a fluorogenic probe to enable the detection of a specific PCR product as it accumulates during PCR cycles | Uses SYBR Green I dye, or similar: dye binds to double-stranded DNA, to detect PCR product as it accumulates during PCR cycles |
| Specificity | High | Low |
| Sensitivity—low copies | High | Variable* |
| Reproducibility | High | Variable* |
| Multiplexing | Yes | No |
| Predesigned assays | Yes | No |
| User design and optimization | No | Yes |
| Cost | High | Low* |
| Gene expression quantitation | High | Low |
| DNA quantitation | Yes | Yes (pathogen detection) |
| ChIP | Yes | Yes |
| SNP genotyping | Yes | No |
| MicroRNA | Yes | No |
| Copy number | Yes | No |
| Somatic mutation detection | Yes | No |
| Pathway analysis | Yes | No |

*Depends on template quality and primer design/optimization.

# Support at every step of your workflow

## Consistent reliability from manufacturing to follow-up

### Quality manufacturing and stringent quality control

TaqMan Assays are manufactured in-house under rigorous quality processes at our ISO 13485–certified manufacturing facilities, and are never outsourced.

### Comprehensive worldwide support

Whether you need help finding a TaqMan Assay for your target, deciding which format best suits your needs, placing your order through our online ordering system, or setting up your reactions, our global sales and technical support teams are here to help.

### Technical support

If you have questions about how to use TaqMan Assays or how to analyze results, call or email our technical support specialists. These scientists are skilled in experimental planning and design, are expert troubleshooters, and are familiar with a wide variety of applications that use TaqMan Assays.

### Rapid delivery

We continually strive to minimize delivery time on TaqMan Assay products. To that end, we have implemented streamlined order processing systems that interface with our new manufacturing facilities to help reduce delivery times.

### Everything you need to meet the MIQE guidelines for peer-reviewed publications

The Minimum Information for Publication of Quantitative Real-Time PCR Experiments (MIQE) guidelines, published by Bustin et al. in *Clinical Chemistry* (April 2009), are meant to ensure that real-time PCR experiments are meaningful, accurate, and reproducible. We support this initiative and commend the MIQE scientists for their leadership.

### We provide the following for easier adherence to these guidelines:

- **TaqMan Assay annotation**—Information requested under the real-time PCR target, oligonucleotide, and protocol sections of the guidelines is provided in your assay shipment and on our website. All biologically relevant information is available, including assay location, transcripts detected, and amplicon size. Protocols with recommended reagents and reaction conditions are also available on our website.
- **Publications**—There are >9,900 peer-reviewed publications that cite TaqMan Assays, so including the TaqMan Assay ID in lieu of sequences is sufficient and widely accepted.
- **Instrument software**—Applied Biosystems™ instrument software reports $C_t$ values for quantification. The $C_t$ can be used to generate standard curves, determine slope, and derive R2 values. To help adhere to the MIQE guidelines, the term quantification cycle ($C_q$) may be used directly in place of $C_t$.
- **Data analysis**—We offer data analysis software, including ExpressionSuite and DataAssist Software; simple-to-use tools for calculating relative gene expression using statistical analysis and visualization; and RealTime StatMiner Software (Integromics) for additional statistical analysis workflows.

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