TaqMan® MicroRNA Assays and Arrays

Convenient, scalable solutions for microRNA quantitation, validation, and profiling

- Highly specific—quantitate only biologically active mature miRNAs
- Sensitive—minimal total RNA input requirements conserve limited samples
- Wide dynamic range—up to 9 logs—to detect high and low expressors in a single experiment
- Fast, simple, and scalable—two-step RT-qPCR assay helps to quickly provide high-quality results
- Megaplex™ Primer Pools—an ideal solution for human, mouse, and rat miRNA profiling
- An integrated solution—from sample preparation to miRNA data analysis on Applied Biosystems® real-time PCR systems

TaqMan® MicroRNA Assays provide superior sensitivity and specificity in single-tube, 384-well microfluidic card, and OpenArray® Plate formats.

MicroRNAs (miRNAs) are a class of naturally occurring noncoding RNAs that play a role in gene regulation. These transcripts are highly conserved, single-stranded RNAs (~22 nucleotides) cleaved from larger hairpin precursor transcripts. miRNAs are involved in the RNA interference pathway and affect gene regulation by cleaving or, more often, repressing the translation of their messenger RNA (mRNA) targets.

TaqMan® MicroRNA Assays—a real-time PCR revolution

By making novel adaptations in assay design, Life Technologies brings the gold standard specificity, sensitivity, and reproducibility of Applied Biosystems® TaqMan® Assays and quantitative real-time PCR to miRNA detection and quantitation. TaqMan® MicroRNA Assays incorporate a target-specific stem–loop reverse transcription primer (Figure 1) to address a fundamental problem in miRNA quantitation: the short length of mature miRNAs (~22 nucleotides) prohibits conventional design of a random-primed RT step followed by a specific real-time assay. The stem–loop structure provides specificity for only the mature miRNA target and forms an RT primer/mature miRNA chimera that extends the 3' end of the miRNA. The resulting longer RT product presents a template amenable to standard real-time PCR using TaqMan® Assays. To help ensure accurate results, the TaqMan® MicroRNA Assay design pipeline has been extensively validated using data generated from over 2,000 assays (see *Design Pipeline for TaqMan® Small RNA Assays* for more details).

The flexibility to help meet your research needs

TaqMan® MicroRNA Assays are available in a number of formats. Individual miRNA assays are perfect for targeted quantitation workflows, while TaqMan® Array MicroRNA Cards and TaqMan® OpenArray® MicroRNA Panels enable profiling of hundreds of miRNAs in a single experiment using human, mouse, or rat samples. TaqMan® Array MicroRNA Cards are ideal for studies containing a limited number of samples and deliver the broad dynamic range for which TaqMan® chemistry

is known. For larger studies requiring high sample throughput, TaqMan® OpenArray® MicroRNA Panels enable profiling of up to 36 samples per 8-hour working day.

Distinguish between highly homologous mature miRNAs

TaqMan® MicroRNA Assays are not only specific for mature miRNAs; they can also distinguish between highly homologous targets. Because many miRNA family members differ in sequence by as little as one base, real-time PCR using TaqMan® Assays helps provide the specificity needed for differentiation (Figure 2).

Get accurate data from minimal starting material

TaqMan® MicroRNA Assays are extremely sensitive, requiring significantly less purified total RNA compared to the hundreds of nanograms needed for hybridization-based methods. Individual TaqMan® MicroRNA Assays require as little as 1–10 ng of input material. The amount of sample needed is further reduced more than 300-fold when using Megaplex™ Primer Pools to profile hundreds of miRNAs in a single experiment.

Superior dynamic range

TaqMan® MicroRNA Assays deliver up to 9 logs of linear dynamic range. miRNA targets that vary from a few to millions of copies can be accurately quantitated in the same experiment—an important factor, given the wide range of miRNA concentrations within and across different cells, tissue types, and disease states.

Fast time-to-results

Because they use gold standard TaqMan® reagent–based technology with universal thermal cycling conditions, TaqMan® MicroRNA Assays are fast and easy to set up. Just load your total RNA sample on any Applied Biosystems® real-time PCR system and get results in as little as 2 hours. Megaplex™ Primer Pools, used in conjunction with TaqMan® Array MicroRNA Cards or TaqMan® OpenArray® MicroRNA Panels, provide additional throughput enhancements that simplify running hundreds of assays in parallel.

An ideal choice for microRNA profiling

To identify differentially expressed miRNAs, many studies begin by generating a global miRNA expression profile. Megaplex™ Pools, in conjunction with TaqMan® Array MicroRNA Cards, are perfect for such experiments. They can be used to rapidly generate a human, mouse, or rat miRNA profile, in a single working day using as little as 1 ng of total RNA (Figure 3). Combined with all the advantages of TaqMan® Assay chemistry, this provides significant benefits over microarrays, which require several days and hundreds of nanograms of input RNA to generate data. For larger studies, where sample throughput

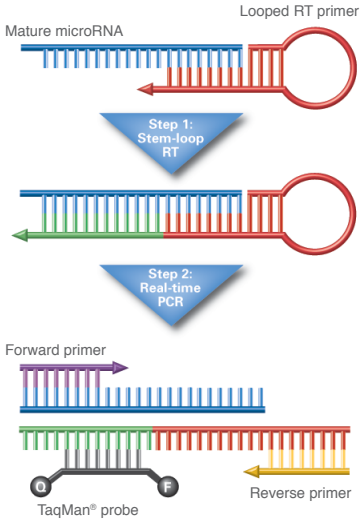

Figure 1. TaqMan® MicroRNA Assay mechanism. A simple two-step mechanism brings the advantages of TaqMan® real-time PCR to miRNA quantitation.

Applied Biosystems

	Synthetic template			
Assay	let-7a	let-7b	let-7c	let-7d
let-7a	100%	0%	3%	1%
let-7b	0%	100%	7%	0%
let-7c	0%	2%	100%	0%
let-7d	3%	0%	1%	100%

Vendor 1

	Synthetic template			
Assay	let-7a	let-7b	let-7c	let-7d
let-7a	100%	4%	51%	3%
let-7b	0%	100%	23%	0%
let-7c	2%	83%	100%	0%
let-7d	Assay not available			

Vendor 2

	Synthetic template			
Assay	let-7a	let-7b	let-7c	let-7d
let-7a	100%	0%	0%	1%
let-7b	0%	100%	0%	0%
let-7c	0%	2%	100%	0%
let-7d	24%	0%	0%	100%

hsa-let-7a UGAGGUAGUAGGUUGUAUAGUU
hsa-let-7b UGAGGUAGUAGGUUGUGUGGUU
hsa-let-7c UGAGGUAGUAGGUUGUAUGGUU
hsa-let-7d AGAGGUAGUAGGUUGCAUAGUU

Indicates a perfect match
Indicates low cross-reactivity
Indicates high cross-reactivity

Figure 2. Single-base discrimination of individual TaqMan® MicroRNA Assays compared with two competitors. Relative detection (%) is calculated based on C_t difference between perfectly matched and mismatched assays, where a relative detection of 50% is assigned for each C_t difference of 1.

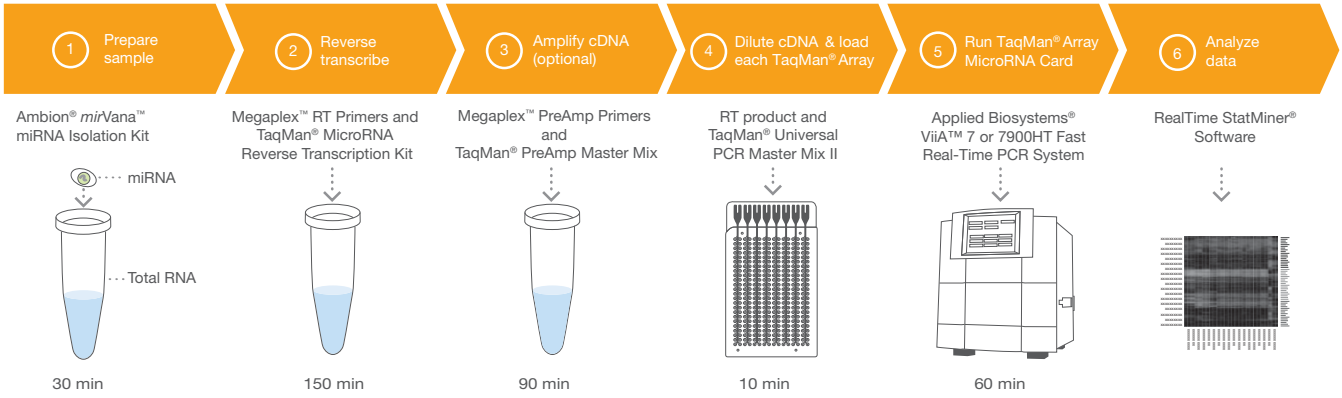

Figure 3. TaqMan® Array MicroRNA Card workflow. Get a complete human or rodent miRNA profile in as little as 4 hours, and in only 5.5 hours with the optional Megaplex™ PreAmp Primers and TaqMan® PreAmp Master Mix step.

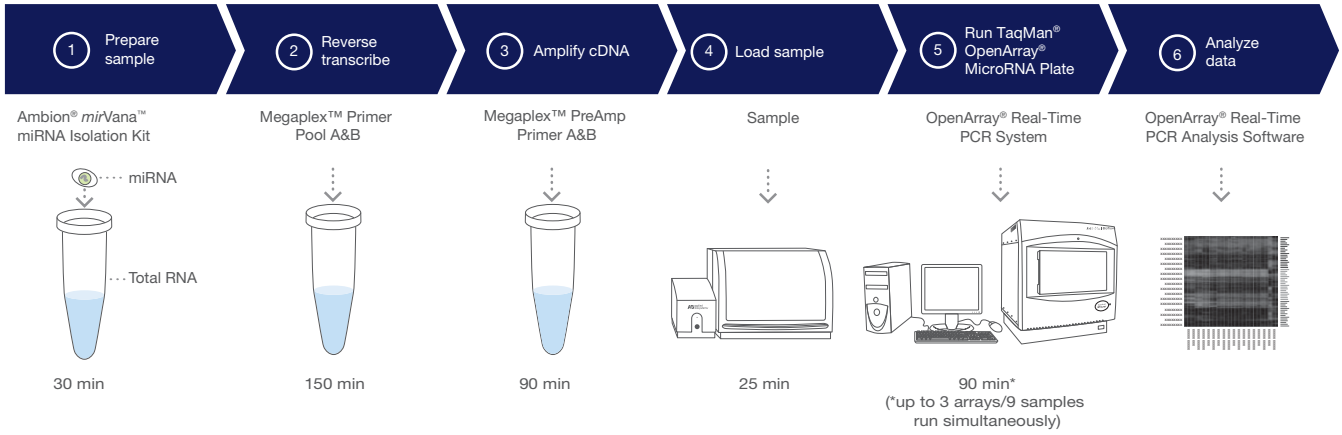

Figure 4. TaqMan® OpenArray® MicroRNA Panel workflow. Get a complete human or rodent (mouse and rat) miRNA profile for 9 samples in about 7 hours.

is critical, TaqMan® OpenArray® MicroRNA Panels enable 3 samples per plate and 3 plates per run to be processed in parallel—a total of 9 samples per OpenArray® System run (Figure 4), and up to 36 samples per 8-hour working day.

Complete product solution

We offer the most comprehensive portfolio of innovative miRNA products and throughput solutions for your research needs. From RNA isolation kits to reagents and assays for miRNA quantitation, validation, or profiling to miRNA inhibitors and mimics for functional analysis, Life Technologies offers a variety of fully validated choices to help meet your research needs.

The TaqMan® MicroRNA Assays product family TaqMan® MicroRNA Assays are convenient, predesigned, functionally validated, and available in a variety of formats to best meet profiling and targeted quantitation research needs.	**Profiling**	**Targeted quantitation**
TaqMan® Array MicroRNA Cards		
Offering the advantages of TaqMan® MicroRNA Assays in a convenient, preconfigured, and easy-to-use 384-well microfluidic card, TaqMan® Array MicroRNA Cards are available for human, mouse, or rat miRNA profiling. A set of two cards is available for each species. The content of each card is matched to a corresponding Megaplex™ Primer Pool. Reducing experimental setup time and experimental variability, this solution is ideal for smaller studies where throughput is not a concern.	✓	
TaqMan® OpenArray® MicroRNA Panels		
Ideal for large human and rodent (mouse and rat) profiling studies, TaqMan® OpenArray® MicroRNA Panels offer content matched to Megaplex™ Primer Pools with the significant throughput enhancements offered by the OpenArray® Real-Time PCR System. Run up to three samples in parallel per OpenArray® Plate, up to 36 samples per 8-hour working day, maximizing sample throughput and productivity.	✓	
Megaplex™ Primer Pools		
Providing comprehensive coverage of the Sanger miRBase, when used with TaqMan® Array MicroRNA Cards or TaqMan® OpenArray® MicroRNA Panels, Megaplex™ Primer Pools enable the ideal miRNA profiling solution: • **Megaplex™ RT Primers** Designed to streamline experimental workflows, Megaplex™ RT Primers provide a single-reaction solution when preparing cDNA for hundreds of targets. Two Megaplex™ RT Primer pools are available for human, mouse, and rat species.. • **Megaplex™ PreAmp Primers** Significantly enhance the ability to detect low-expression miRNAs. With content matched to Megaplex™ RT Primers, two Megaplex™ PreAmp Primer pools are available for human and rodent.	✓	
TaqMan® MicroRNA Assays		
Single-tube TaqMan® MicroRNA Assays are available for any miRNA in the Sanger miRBase Registry. Each kit includes a TaqMan® Assay and a reverse transcription primer specific for the target of interest. We continually increase the number of assays in order to stay aligned with the Sanger miRBase Registry.		✓
TaqMan® MicroRNA Assay Endogenous Controls		
This selection of endogenous control assays for human, mouse, rat, *Drosophila*, *C. elegans*, and *Arabidopsis* simplifies data normalization. For detailed information, refer to the application note *Endogenous Controls for Real-Time Quantitation of miRNA Using TaqMan® MicroRNA Assays*.		✓
TaqMan® MicroRNA Reverse Transcription Kit		
The TaqMan® MicroRNA RT Kit provides all the necessary components for optimal TaqMan® MicroRNA Assay performance. Components of this kit are used with a single RT primer provided with each individual assay, or with Megaplex™ RT Primers, to convert miRNA to cDNA prior to real-time PCR quantitation.	✓	✓

Applied Biosystems® real-time PCR platforms

Applied Biosystems® real-time PCR systems make real-time PCR more accessible than ever before by providing powerful solutions to fit the needs of any laboratory. Each system is easy to use with next-generation software and is backed by the unmatched track record of performance, quality, and long-term reliability of Applied Biosystems® instruments.

Ordering information

TaqMan® MicroRNA Assay products
TaqMan® MicroRNA Assays
Choose from a collection of inventoried assays for most human and rodent miRNAs, and over 6,000 made-to-order assays for all other miRNAs in the Sanger registry. Each assay provides 50 RT (15 µL) and 150 real-time PCR (20 µL) reactions. For a complete list, go to www.appliedbiosystems.com/taqmanmirna.
TaqMan® MicroRNA Cards
Ideal for smaller studies or when sample amounts are limiting in human and rodent species. Choose the full 2-card set for comprehensive coverage or either card individually for a more focused view, depending on study needs. Each card enables up to 381 TaqMan® MicroRNA Assays to be run in parallel. For a complete list, go to www.appliedbiosystems.com/mirnacards.
TaqMan® OpenArray® MicroRNA Panels
Provides TaqMan® MicroRNA Assays in an OpenArray® Plate for a complete human or rodent miRNA profile. Workflow enhancements make this the ideal choice for medium to large study sizes. For a complete list, go to www.appliedbiosystems.com/mirnaopenarray.
Megaplex™ Primer Pools
Required for up-front reverse transcription of miRNA prior to analysis using either TaqMan® Array MicroRNA Cards or TaqMan® OpenArray® MicroRNA Panels. Available in a variety of packaging solutions based on species and preamplification requirements. For a complete list, go to www.appliedbiosystems.com/megaplex.
TaqMan® MicroRNA Endogenous Controls
Each endogenous control includes a 20X TaqMan® Assay and a 5X reaction RT primer, providing 50 RT (15 µL) and 150 real-time PCR (20 µL) reactions. For a complete list, go to www.appliedbiosystems.com/taqmanmirna.
Custom TaqMan® Small RNA Assays
Applying the same sophisticated *in silico* design process used for TaqMan® MicroRNA Assay designs for any small RNA. To order, go to www.appliedbiosystems.com/smallrna.
Related products required for use with TaqMan® MicroRNA Assays†
Ambion® *mir*Vana™ miRNA Isolation Kit
TaqMan® MicroRNA Cells-to-C$_T$™ Kit
Ambion® RecoverAll™ Total Nucleic Acid Isolation Kit for FFPE Tissues
Other related products for use with TaqMan® MicroRNA Assays†
Ambion® Anti-miR™ miRNA Molecules, Controls, and Libraries
Ambion® Pre-miR™ miRNA Molecules, Controls, and Libraries
† Visit **www.appliedbiosystems.com** for more information on these miRNA-related products.

For more information and full terms of the TaqMan® Assays QPCR Guarantee, visit **www.appliedbiosystems.com/taqmanguarantee**.

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Headquarters
5791 Van Allen Way | Carlsbad, CA 92008 USA | Phone +1.760.603.7200 | Toll Free in the USA 800.955.6288
www.lifetechnologies.com

life technologies™

TaqMan Advanced miRNA Assays

Key features

- **Universal reverse transcription (RT)**—one RT step for all Applied Biosystems™ TaqMan® Advanced miRNA Assays
- **Sensitive**—detect as few as 60 copies of input microRNA (miRNA)
- **Specific**—detect only mature miRNA and distinguish between highly homologous miRNAs
- **Small sample input**—detect and quantify mature miRNA from as little as 1 pg of total RNA or 2 µL of plasma or serum
- **Versatile**—compatible with tissue and biofluids including serum and plasma

MicroRNAs (miRNAs) are short (19–24 nucleotides in length), noncoding RNAs that posttranscriptionally regulate gene expression and control diverse biological processes including cell proliferation, cell fate determination, and cell death. miRNAs have significant promise as biomarkers for diseases, given their regulatory role in many cellular processes combined with their stability in samples such as plasma, serum, and tissue. Circulating miRNAs are easily accessible via serum samples, and differential expression of miRNAs in healthy versus diseased research samples may be used to detect or monitor disease progression in the future. The short length, low abundance, and sequence similarity of many biologically important miRNAs can lead to challenges in studying them. Thus, choosing the right tools is critical for a successful miRNA experiment.

Streamlined workflow with high sensitivity and specificity

TaqMan Advanced miRNA Assays and the Applied Biosystems™ TaqMan® Advanced miRNA cDNA Synthesis Kit have been specially designed to quantify mature miRNAs using real-time PCR (qPCR). Ideal for analysis of multiple miRNA targets from a single sample, the TaqMan Advanced miRNA cDNA Synthesis Kit has a universal RT step to simplify and streamline the workflow (Figure 1). After sample preparation, cDNA is synthesized by 3′ poly(A) tailing and 5′ ligation of an adaptor sequence to extend the miRNA at each end prior to RT. The cDNA is then preamplified using universal primers and a master mix to uniformly increase the amount of cDNA for each target, maintaining the relative differential levels. Unlike traditional preamplification, these primers recognize the universal sequences added to every miRNA at the 5′ and 3′ ends, helping to ensure there is no amplification bias.

ThermoFisher SCIENTIFIC

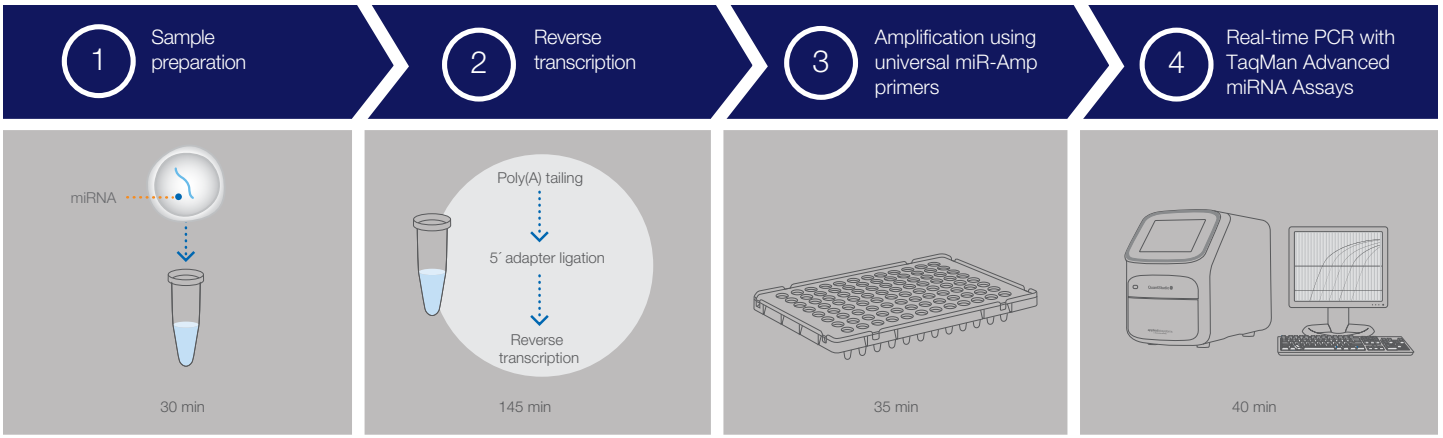

Figure 1. The TaqMan Advanced miRNA Assay workflow.

TaqMan Advanced miRNA Assays are then used to quantitate each miRNA target by qPCR. Drawing from the proprietary Applied Biosystems™ bioinformatics assay design pipeline, TaqMan Advanced miRNA Assays are preformulated primer and probe sets designed to detect and quantify a large range of mature miRNAs. Representing some of the most sensitive and specific assays available, TaqMan Advanced miRNA Assays provide up to 6 logarithmic units of dynamic range using as little as 1 pg of total RNA from tissue or 2 µL of eluant from serum or plasma. In addition, these assays exhibit high specificity with little to no cross-reactivity between closely related miRNA family members.

Superior sensitivity in tissue, serum, and plasma

In situations where sensitivity is crucial, such as when using miRNAs as biomarkers, TaqMan Advanced miRNA Assay chemistry offers a clear advantage over other commercially available kits across a range of serum or plasma samples (Figure 2). This system is compatible with the typically minute amounts of RNA in serum and plasma, to support the study of circulating miRNAs. In addition, the unique universal RT system is ideal for samples that are limited in quantity, and the cDNA generated from a single reaction can be stored frozen, ready for any number of possible uses.

Gold-standard TaqMan Assay specificity

When closely related mature miRNAs differ by as little as one base, it is important to use tools with the power to discriminate between these highly similar targets. The specificity of TaqMan Advanced miRNA Assays is demonstrated using a panel of closely related let-7 miRNAs (Figure 3). Each assay was tested individually against synthetic miRNAs for members of the let-7 family, with the C_t differences used to calculate the percent relative detection. There is minimal or no cross-reactivity between each member of the let-7 family.

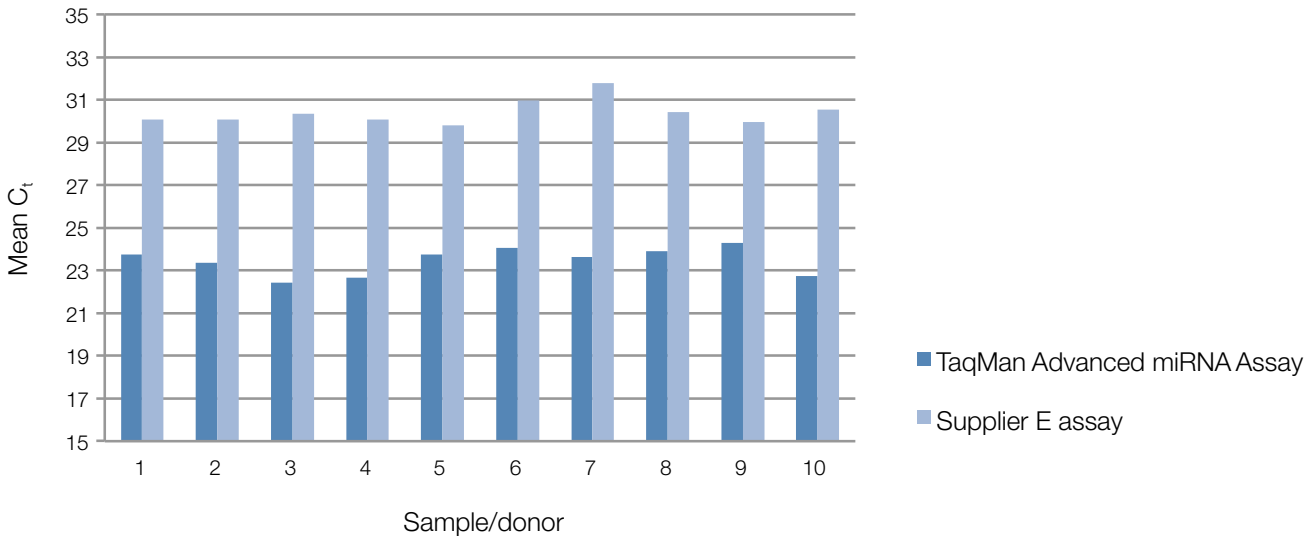

Figure 2. Sensitivity of miRNA assays using serum samples. Data for the hsa-miR-145-5p TaqMan Advanced miRNA Assay on serum samples from 10 different donors are compared with those of the corresponding assay from another supplier.

	Synthetic template							
TaqMan Advanced miRNA Assay	Let-7a	Let-7b	Let-7c	Let-7d	Let-7e	Let-7f	Let-7g	Let-7i
Let-7a	100%	0%	0%	0%	4%	2%	0%	0%
Let-7b	0%	100%	3%	0%	0%	0%	0%	0%
Let-7c	1%	2%	100%	0%	0%	0%	0%	0%
Let-7d	0%	0%	0%	100%	0%	0%	0%	0%
Let-7e	0%	0%	0%	0%	100%	0%	0%	0%
Let-7f	1%	0%	0%	0%	0%	100%	0%	0%
Let-7g	0%	0%	0%	0%	0%	0%	100%	4%
Let-7i	0%	1%	0%	0%	0%	0%	0%	100%

miRNA name	miRNA sequence
hsa-let-7a-5p	UGA GGU AGU AGG UUG UAU AGU U
hsa-let-7b-5p	UGA GGU AGU AGG UUG UGU GGU U
hsa-let-7c-5p	UGA GGU AGU AGG UUG UAU GGU U
hsa-let-7d-5p	AGA GGU AGU AGG UUG CAU AGU U
hsa-let-7e-5p	UGA GGU AGG AGG UUG UAU AGU U
hsa-let-7f-5p	UGA GGU AGU AGA UUG UAU AGU U
hsa-let-7g-5p	UGA GGU AGU AGU UUG UAC AGU U
hsa-let-7i-5p	UGA GGU AGU AGU UUG UGC UGU U
	* * * * * *

Figure 3. Assay specificity on closely related miRNAs. TaqMan Advanced miRNA Assays demonstrate little to no cross-reactivity between highly homologous members of the let-7 miRNA family. Differences in nucleotide sequences are indicated by asterisks (*).

TaqMan Advanced miRNA Assays provide high specificity, especially for the 5′ seed region of the miRNA, as demonstrated in Figure 4 with closely related miRNAs that differ by only one nucleotide at the 5′ end—the highly conserved seed region of homologous miRNAs [1]. Synthetic artificial targets of hsa-miR-17 and hsa-miR-106a were tested against corresponding TaqMan Advanced miRNA Assays and compared with another commercially available assay. Despite published claims of the other supplier's assay having minimal cross-reactivity, Figure 4 shows high cross-reactivity (105% relative detection) of the hsa-miR-17 target with the hsa-miR-106a assay, whereas the corresponding TaqMan Advanced miRNA Assay produced only 1% relative detection. This unique ability of TaqMan Advanced miRNA Assays to discriminate between highly similar miRNAs can be extremely powerful for distinguishing the biological roles of highly similar miRNAs.

A

miRNA	Sequence
hsa-miR-17	CAA AGU GCU UAC AGU GCA GGU AG
hsa-miR-106a-5p	AAA AGU GCU UAC AGU GCA GGU AG
	*

B

	Synthetic template			
	TaqMan Advanced miRNA Assays		Supplier E assays	
Assay	hsa-miR-17	hsa-miR-106a	hsa-miR-17	hsa-miR-106a
hsa-miR-17	100%	0%	100%	2%
hsa-miR-106a	1%	100%	105%	100%

Figure 4. Assay specificity with miRNA sequence similarity at the 5′ end. TaqMan Advanced miRNA Assays have a unique ability to discriminate between miRNAs differing in sequence at the 5′ end, denoted by the asterisk (*), as compared with published and in-house data of another commercially available assay. **(A)** The sequence of two closely related miRNAs, which differ by one nucleotide at the 5′ end. **(B)** Percent relative cross-reactivity for other supplier's miRNA assays and TaqMan Advanced miRNA Assays.

Reproducible with a 6-log dynamic range—precision from as little as 60 target copies

Applied Biosystems™ TaqMan® MicroRNA Assays are considered the gold standard for quantifying miRNAs by real-time PCR, and TaqMan Advanced miRNA Assays together with the TaqMan Advanced miRNA cDNA Synthesis Kit continue this reputation, with superior sensitivity and precision (Figure 5). Quadruplicate reactions with a synthetic hsa-miR-378 miRNA target exhibit excellent precision over a linear dynamic range of 6 logarithmic units. The assay accurately detects as few as 60 copies of target miRNA in the most dilute sample. The improved reproducibility of the TaqMan Advanced miRNA Assay system enables the detection of lower amounts of target miRNA and allows for better discrimination with fewer replicates required.

Excellent experimental reproducibility is accomplished using a range of synthetic oligonucleotide, nonmammalian spike-in controls that are detected with specially designed TaqMan Advanced miRNA Assays (Table 1). These spike-in controls facilitate the data normalization required to correct for technical and procedural variations particularly inherent in serum and plasma samples.

Universal amplification across a range of targets

TaqMan Advanced miRNA chemistry has no inherent bias across the ligation or miR-Amp steps, resulting in true universal amplification and superior sensitivity, regardless of the target miRNA. The workflow facilitates the addition of a poly(A) tail on the 3′ end and the ligation of an adapter on the 5′ end, yielding universal sequences that are recognized by the miR-Amp universal primers. These universal primers amplify all of the cDNA in the sample during the miR-Amp step, providing increased sensitivity without introducing amplification bias.

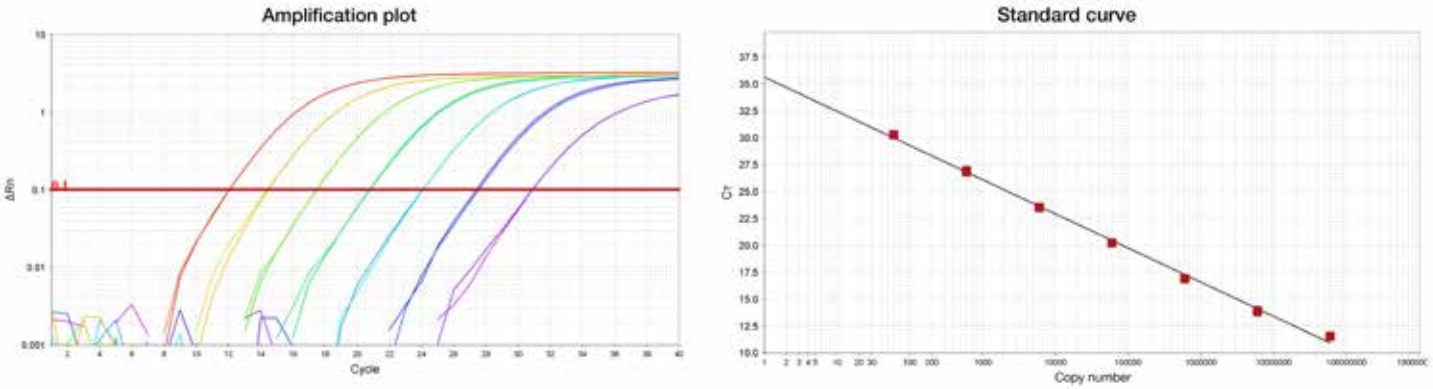

Figure 5. Dynamic range and sensitivity. A TaqMan Advanced miRNA Assay detects a synthetic hsa-miR-378 miRNA target down to 60 copies with a 6–logarithmic unit dynamic range.

Table 1. A set of 7 nonmammalian miRNAs is available for use as spike-in controls, to normalize sample input amount for difficult samples such as serum and plasma.

Control type	Gene ID/miRBase ID (v22)	Assay ID	Product name	Target sequence
Exogenous	ath-miR159a	478411_mir	ath-miR159a	UUUGGAUUGAAGGGAGCUCUA
Exogenous	cel-lin-4	478289_mir	cel-lin-4-5p	UCCCUGAGACCUCAAGUGUGA
Exogenous	cel-miR-2	478291_mir	cel-miR-2-3p	UAUCACAGCCAGCUUUGAUGUGC
Exogenous	cel-miR-238	478292_mir	cel-miR-238-3p	UUUGUACUCCGAUGCCAUUCAGA
Exogenous	cel-miR-39	478293_mir	cel-miR-39-3p	UCACCGGGUGUAAAUCAGCUUG
Exogenous	cel-miR-54	478410_mir	cel-miR-54-3p	UACCCGUAAUCUUCAUAAUCCGAG
Exogenous	cel-miR-55	478295_mir	cel-miR-55-3p	UACCCGUAUAAGUUUCUGCUGAG

A range of products for a range of situations

TaqMan Advanced miRNA Assays provide even more options to support your miRNA research and application needs. Standard TaqMan MicroRNA Assays continue to offer broad miRBase coverage and gold-standard specificity over a wide range of predesigned assays and formats, while TaqMan Advanced miRNA Assays use a universal RT step and provide superior sensitivity for biological samples. Use Table 2 to help select the TaqMan® miRNA product that is best suited to your need.

Reference

1. Bartel DP (2004) MicroRNAs: genomics, biogenesis, mechanism, and function. *Cell* 116:281–297.

Table 2. TaqMan miRNA assay selection guide.

	TaqMan MicroRNA Assays	TaqMan Advanced miRNA Assays
Description	TaqMan MicroRNA Assays employ a novel target-specific stem-loop primer during cDNA synthesis that produces a template for real-time PCR	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
RT chemistry	miRNA-specific RT	Universal RT
Throughput	Best for 1–10 targets	Best for >10 targets
Coverage	205 species available; coverage for miRBase v.21	All human, mouse, and rat miRNAs; coverage for miRBase v.21
Formats	Available in individual tubes, TaqMan® array cards and plates, and OpenArray™ formats	Available in individual tubes; inquire for custom plating options

Ordering information

Product	Quantity	Cat. No.
TaqMan Advanced miRNA cDNA Synthesis Kit	50 reactions	A28007
TaqMan Advanced miRNA Assays	250 qPCR reactions (20 µL)	A25576

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Find out more at **thermofisher.com/advancedmirna**

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