TaqMan® Fast Advanced Master Mix

Performance superior to standard master mixes in less than half the time

Features and benefits

- Best-in-class performance—superior sensitivity, accuracy, dynamic range, and specificity compared to standard mixes in standard mode
- Engineered for enhanced benchtop stability—stable at room temperature for up to 72 hours in preassembled reactions
- Optimized for multiplexing—validated for duplexing with exogenous and endogenous internal positive control assays
- Reduced run times on fast and standard instrumentation—optimized on fast instruments and fast cycling conditions on standard instruments
- Seamlessly transitions into your experiments—validated with TaqMan® Assays for gene expression and microRNAs, and TaqMan® Array Microfluidic Cards

TaqMan® Fast Advanced Master Mix has been designed for performance superior to standard master mixes (Figure 1), allowing for shorter run times (<40 min) with results equal to or better than what you achieve today.

Our newest, best-in-class gene expression master mix employs AmpliTaq® Fast DNA Polymerase, which has been engineered for enhanced stability, allowing your preassembled reactions to be left at room temperature for up to 72 hours without impacting performance. The formulation has been optimized for duplex PCR with both endogenous and exogenous control assays, enabling you to run a control in every well to further increase confidence in your results.

For maximum flexibility, TaqMan® Fast Advanced Master Mix has also been optimized for use on both fast instruments and fast PCR cycling conditions on standard instruments. TaqMan® Fast Advanced Master Mix has been rigorously tested and optimized to ensure success with all TaqMan® gene expression and microRNA assays, enabling seamless transitions to your experiments.

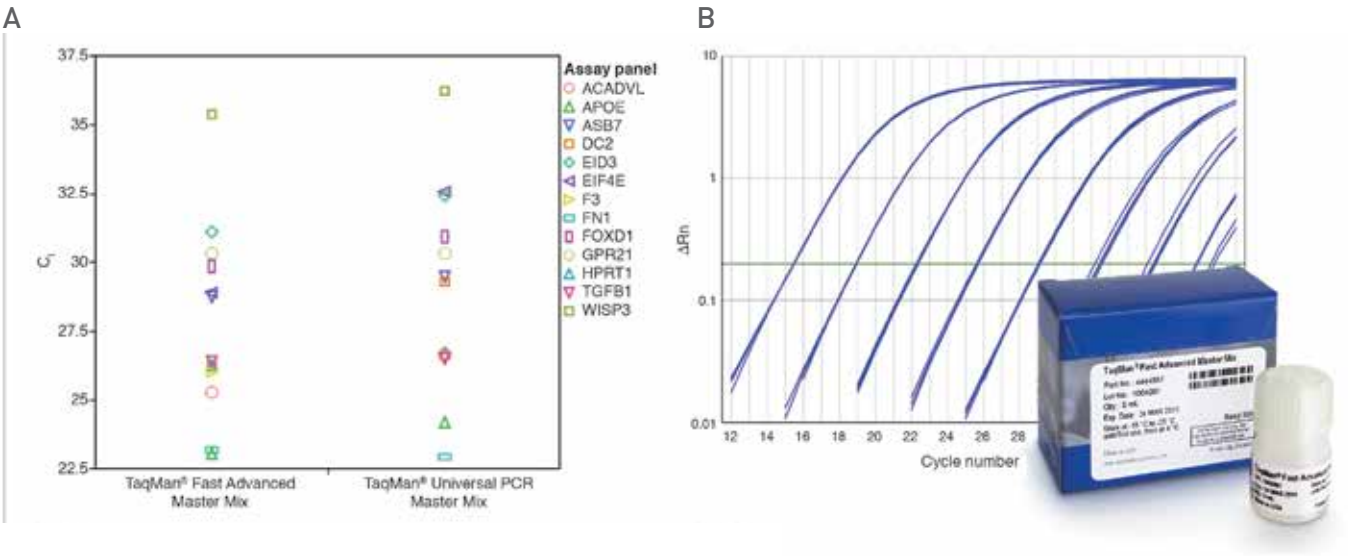


Figure 1. Performance of TaqMan® Fast Advanced Master Mix vs. TaqMan® Universal PCR Master Mix. **(A)** Comparison of C_t values across a panel of 13 TaqMan® Gene Expression Assays. **(B)** Representative amplification plot from real-time PCR for a dilution series of human cDNA amplified in 4 replicate reactions using the Applied Biosystems® 7500 Fast Real-Time PCR System and the *FN1* TaqMan® Gene Expression Assay.

life technologies

Table 1. Dynamic range comparison between TaqMan® Fast Advanced Master Mix and leading competitor products. Comparison of detection range (in number of logs) across a panel of various TaqMan® Gene Expression Assays. The range of detection must have PCR efficiency between 85% and 115% and R^2 values ≥0.98. Each master mix was tested using cDNA template and run according to manufacturers' respective recommended protocols. Reactions (6 replicates) were run on the Applied Biosystems® 7900HT Fast Real-Time PCR System.

Assay	Assay type	TaqMan® Fast Advanced Master Mix	Roche FastStart® Reagent	Qiagen QuantiTect® Reagent	Qiagen QuantiFast® Reagent	Bio-Rad iTaq™ Supermix	Bio-Rad iTaq™ Fast Supermix
APOA1	Good Fast	**7**	5	5	5	5	5
APOA1 **(FAM™)/*GAPDH* (VIC®)**	Good Fast	**7**	4	4	5	5	5
APOA1 **(FAM™)/*GAPDH* (VIC®)**	Housekeeping	**7**	7	7	7	7	7
UBC	Housekeeping	**6**	4	4	5	5	5
HIST1H3F	LenAmpLong	**5**	3	3	3	3	3
TXNDC	GCAmpLow, PrimerLong	**5**	2	2	3	3	3
FOXD1	GCAmpHigh	**4**	2	2	2	2	2
GPR34	GCProbeLow, Low dRn	**3**	1	2	2	2	2
WISP	HighProbeTm	**2**	0	0	1	1	1

Logs	Final (ng/µL)
7	0.00001
6	0.0001
5	0.001
4	0.01
3	0.1
2	1
1	10

Best-in-class performance

TaqMan® Fast Advanced Master Mix has been designed to provide performance superior to results you currently expect from your standard master mix. The master mix has been benchmarked against the leading suppliers' standard and fast master mixes to help ensure that it succeeds in providing best-in-class sensitivity, accuracy, dynamic range, and specificity.

The unparalleled dynamic range of TaqMan® Fast Advanced Master Mix is shown in Table 1. These results demonstrate the ability of the master mix to provide dependable target quantitation over a wider dynamic range compared to leading suppliers' standard and fast master mixes. For a variety of assays, TaqMan® Fast Advanced Master Mix was capable of detection across 2 additional logs when run under identical conditions.

Benchtop stability for high-throughput handling and convenience

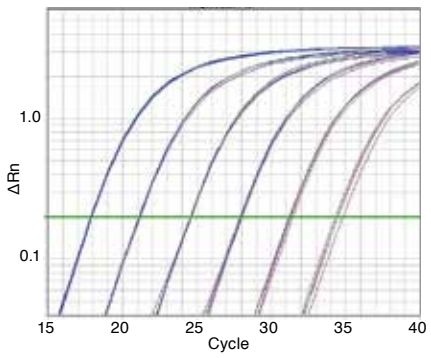
TaqMan® Fast Advanced Master Mix has been engineered to retain its high level of performance in preassembled reactions for up to 72 hours. The stability of this mix provides users of high-throughput liquid handling systems the assurance that the results on the first plate will mimic those of the last plate. For those with less extreme throughput needs, the enhanced stability of this master mix provides overall added convenience to your workflow, as you are no longer constrained to immediately running your plates upon assembly.

Figure 2 shows an assay that was run upon assembly (time 0) and after 72 hours of incubation at 30°C, simulating the most extreme room temperature scenario. The results after 72 hours show excellent PCR efficiency and R^2 values, almost identical to those at time 0, as well as a ΔC_t between time 0 and 72 hr of less than 1.

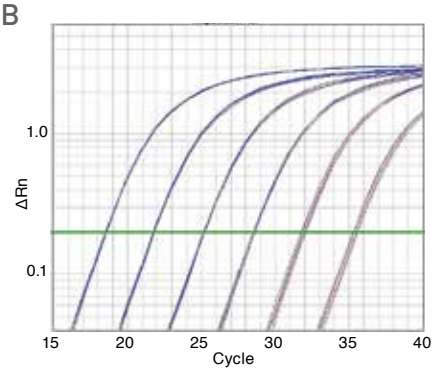
Optimized for multiplexing

We realize that confidence is paramount when it comes to your results. For added confidence in the results you see in every well, TaqMan® Fast Advanced Master Mix has been designed to help deliver accurate results for duplex reactions by using an internal positive control (IPC). Figure 3 shows results for the experimental target gene *ACTB* (β-actin), which was serially diluted

A



B

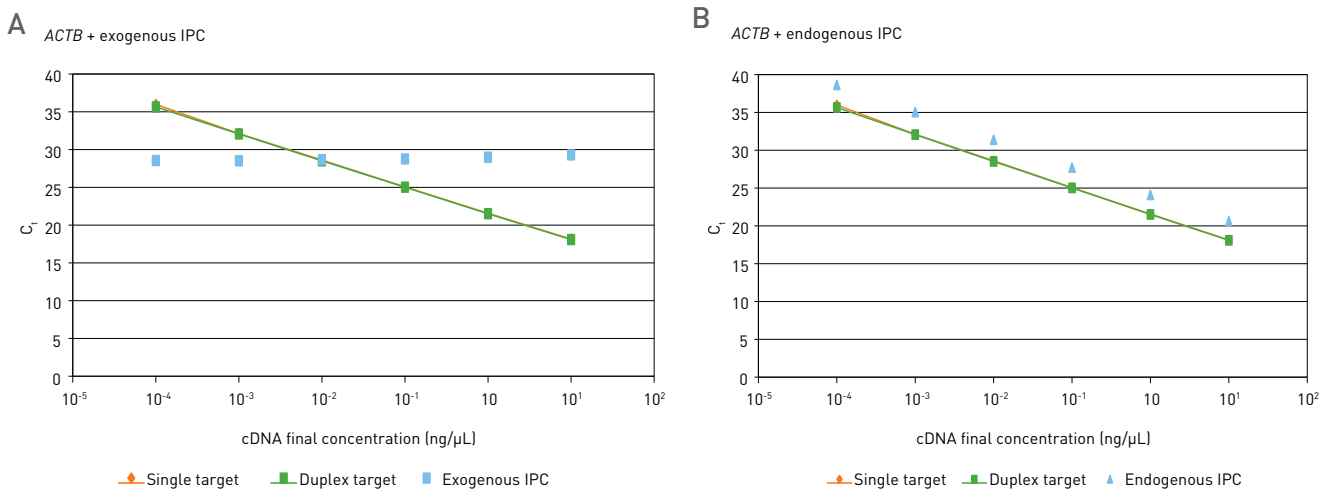


C

PCR efficiency		R^2	
0 hr	72 hr	0 hr	72 hr
99.7%	100.0%	0.9998	0.9997

Final conc. (ng/µL)	C_t	
cDNA	0 hr	72 hr
10	17.81	18.34
1	20.99	21.59
0.1	24.32	24.95
0.01	27.65	28.24
0.001	31.18	31.80
0.0001	34.34	34.80

Figure 2. Benchtop stability of TaqMan® Fast Advanced Master Mix. This *B2M* TaqMan® Gene Expression Assay was run **(A)** upon assembly (time 0) and **(B)** after 72 hours of incubation at 30°C. **(C)** The results after 72 hours show excellent PCR efficiency, R^2 values, and C_t when compared to time 0.



Exogenous duplex

	PCR efficiency	R^2
Single target	92.9%	0.999
Duplex target	95.1%	1.000

Endogenous duplex

	PCR efficiency	R^2
Single target	92.9%	0.999
Duplex target	92.6%	1.000

Figure 3. TaqMan® Fast Advanced Master Mix is optimized for multiplexing with exogenous or endogenous control assays. Results are shown for *ACTB* (β-actin gene), which was serially diluted and amplified in single-target reactions and duplex reactions. The duplex reactions include the single-target *ACTB* and either **(A)** a constant quantity of exogenous target or **(B)** a relative quantity of endogenous target.

and amplified in single-target reactions and duplex reactions. The duplex reactions include the single target *ACTB* and either a constant quantity of exogenous target (Figure 3A) or a relative quantity of endogenous target (Figure 3B). TaqMan® Fast Advanced Master Mix succeeds in providing nearly identical PCR efficiency, R^2, and C_t values for *ACTB* in both simplex and duplex environments.

Validated for microRNA assays

TaqMan® Fast Advanced Master Mix has been validated for use with multiple real-time PCR applications, including microRNA assays. The formulation provides high specificity and dynamic range, the two most critical performance attributes that define successful results when working with microRNAs. The data in Figure 4 demonstrate excellent PCR linearity over a 6-log range of input template.

Reduced run times on standard instrumentation

TaqMan® Fast Advanced Master Mix has been optimized for use with both fast and standard instrumentation, enabling researchers who currently own standard instruments to realize the performance benefits and time savings this mix provides. Figure 5 showcases the impressive results achieved when using TaqMan® Fast Advanced Master Mix under fast thermal cycling

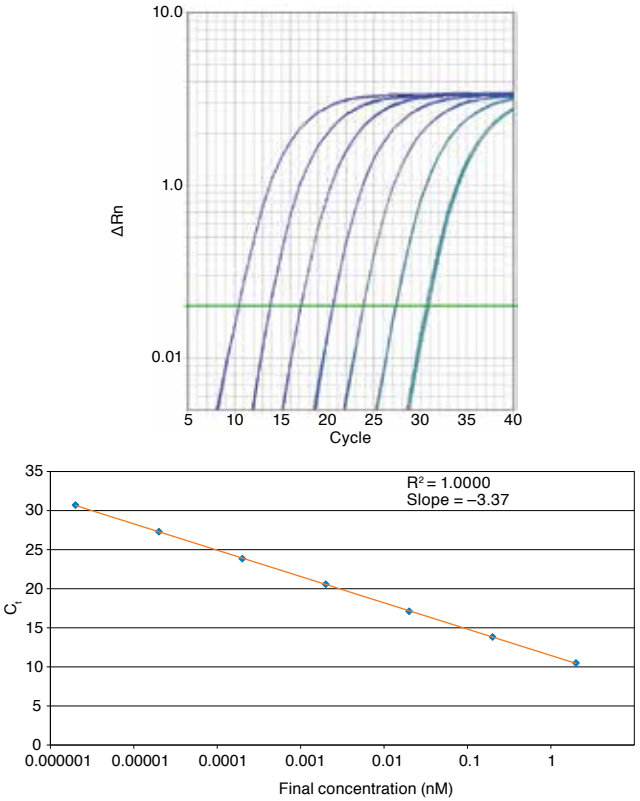


Figure 4. miRNA linear target amplification over a dynamic range of 6 orders of magnitude of input. Amplification plot and standard curve from real-time PCR for a dilution series of a synthetic target amplified in 4 replicate reactions using the Applied Biosystems® 7900HT Fast Real-Time PCR System and the Let7-c TaqMan® MicroRNA Assay.

conditions on the QuantStudio® 12K Flex Real-Time PCR System. The mix has been tested with all Applied Biosystems® standard real-time PCR instrumentation (7900HT, 7500, and 7300 systems) to enable success whether or not you own a fast-enabled instrument.

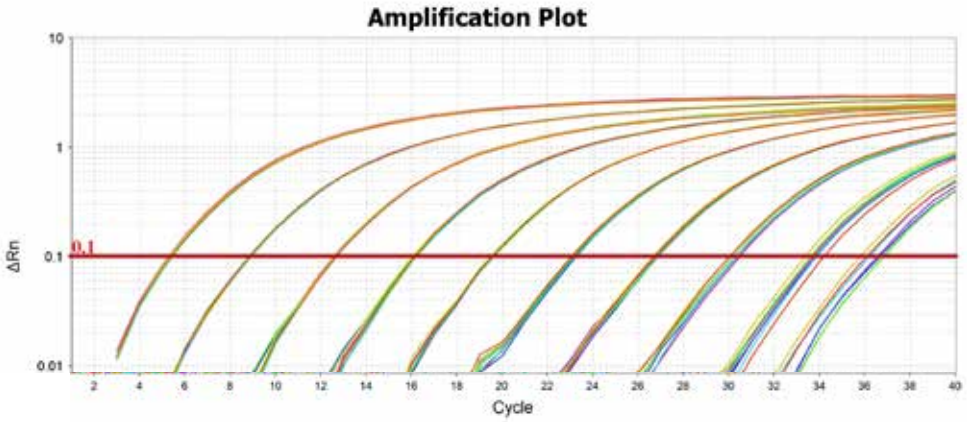


Figure 5. Results on the QuantStudio® 12K Flex Real-Time PCR System using TaqMan® Fast Advanced Master Mix. Amplification plot from real-time PCR for a dilution series of human cDNA amplified in 8 replicate reactions using the Eukaryotic 18S rRNA TaqMan® Gene Expression Assay and the QuantStudio® 12K Flex Real-Time PCR System.

Ordering information

TaqMan® Fast Advanced Master Mix			
Size	**Quantity**	**20 µL reactions**	**Cat. No.**
Mini-Pack	1 x 1 mL	100	4444556
1-Pack	1 x 5 mL	500	4444557
2-Pack	2 x 5 mL	1,000	4444963
5-Pack	5 x 5 mL	2,500	4444964
10-Pack	10 x 5 mL	5,000	4444965
Bulk-Pack	1 x 50 mL	5,000	4444558

Find out more at **lifetechnologies.com**

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