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TaqMan MGB Probes

The gold standard for qPCR research applications

Quality MGB probes for over two decades

Applied Biosystems™ TaqMan® MGB probes provide industry-leading specificity and sensitivity for real-time PCR applications and have long been considered the gold standard in qPCR. We have been making MGB probes for more than 20 years using the highest-quality, proprietary raw materials. Our unique MGB manufacturing processes have been constantly refined over time to help deliver the quality and performance your research relies on.

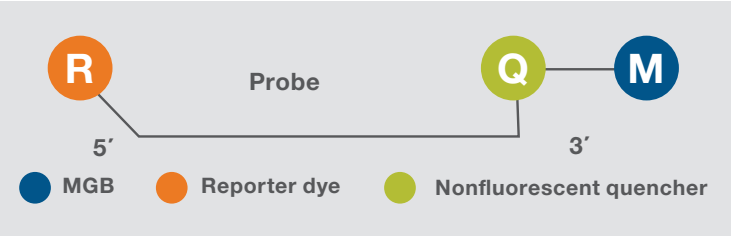
Shorter, more specific probes

TaqMan MGB probes are dual-labeled probes with a 5′ reporter and a 3′ nonfluorescent quencher (NFQ). What sets TaqMan MGB probes apart from other probe-based chemistries is the inclusion of a minor groove binder (hence the name “MGB”) moiety at the 3′ end that increases the melting temperature (T_m) of the probe and stabilizes probe–target hybrids. This means that TaqMan MGB probes can be significantly shorter than traditional probes, providing better sequence discrimination and flexibility to accommodate more targets.

Nonfluorescent quencher (NFQ) maximizes sensitivity

TaqMan MGB probes use an NFQ to absorb (quench) signal from the fluorescent dye label at the other end of the probe. The properties of the NFQ combined with the shorter length of the MGB probe result in lower background signal than with non-MGB NFQ probes. Lower background means increased sensitivity and precision in your data (Figure 1).

Probe specifications	
Form	Liquid
Includes	Probe set
5′ reporter dye options	Applied Biosystems™ FAM™, VIC™, TET™, NED™ dyes
Purification	HPLC
Shelf life	12 months from manufacturing date
Green features	Less waste, sustainable packaging
Shipping condition	Room temperature



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TaqMan probe outperforms non-MGB probe in real-time PCR—in dynamic range, sensitivity, and reproducibility

	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	23.27	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

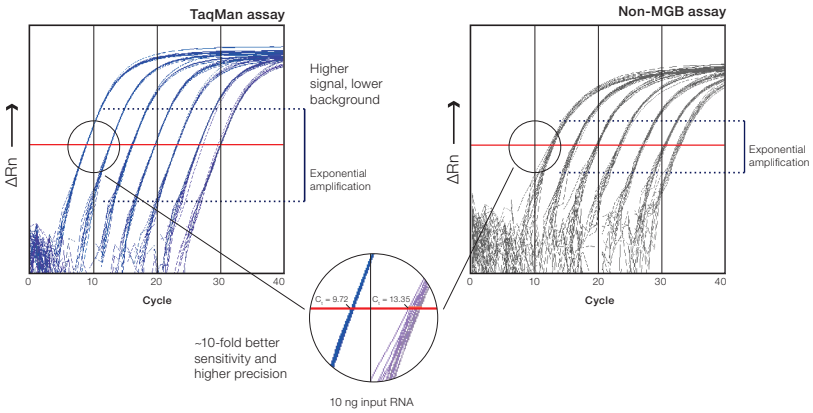

Figure 1. TaqMan probes provide better sensitivity and precision. Comparison of two 5′ nuclease PCR assays for 18S rRNA. Ten-fold dilutions of Universal Human Reference RNA (10–10^{-5} ng) were prepared and analyzed in 11 replicate real-time PCR reactions using either an Applied Biosystems™ TaqMan® Gene Expression Assay (FAM dye label, with NFQ) or a non-MGB assay (FAM dye label, with BHQ). Across all data points spanning 6 orders of magnitude of input template, the TaqMan assay had lower C_t values and better reproducibility. In addition, the TaqMan assay had higher signal and lower background, resulting in better sensitivity.

Multiplexing with MGB

The multiplexing capabilities of TaqMan MGB probes enable cost savings and conservation of limited samples and provide even more flexibility for your real-time PCR assay designs. MGB probes labeled with FAM and VIC dyes can be combined with probes labeled with our proprietary Applied Biosystems™ ABY™ and JUN™ dyes and QSY™ quencher to allow amplification of up to 4 targets in a single reaction.* All 4 dyes are optimized for the filter sets on Applied Biosystems™ real-time PCR instruments and work together with minimal spectral overlap for optimal performance (Figure 2).

* No more than 2 MGB probes are recommended per reaction.

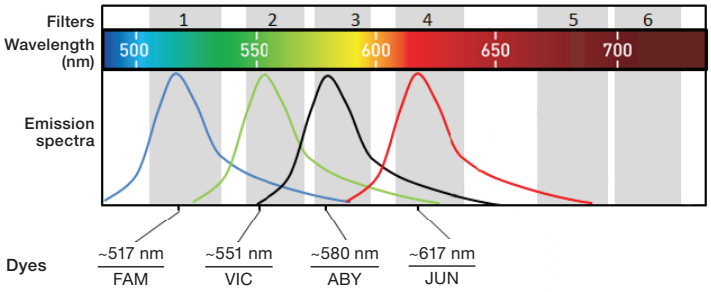

Figure 2. Fluorescence emission spectra of FAM, VIC, ABY, and JUN dyes used for multiplex real-time PCR. Gray zones represent the filters available on Applied Biosystems™ real-time PCR systems: 1 through 6 for the QuantStudio™ 7 or 12K Flex Real-Time PCR System, and 1 through 5 for the QuantStudio™ 6 Flex Real-Time PCR System.

TaqMan Real-Time PCR Assays

Our MGB technology and proprietary assay design algorithms form the foundation for our portfolio of more than 20 million predesigned Applied Biosystems™ TaqMan® Assays addressing every type of qPCR application.

Learn more at **thermofisher.com/taqman**

Ordering information

Product	Size	Cat. No.
FAM, VIC, TET, or NED, MGB NFQ, 1 tube	6,000 pmol	4316034
FAM, VIC, TET, or NED, MGB NFQ, 1 tube	20,000 pmol	4316033
FAM, VIC, TET, or NED, MGB NFQ, 1 tube	50,000 pmol	4316032

Learn more about custom TaqMan MGB Probes at
thermofisher.com/mgbprobe

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