Primetime™ qPCR Probes

Double- and single-quenched probes for use in your 5’ nuclease assays

Choose from a wide range of dyes and quenchers, including several license-free combinations

Reduce costs and waste with convenient sizes, starting from 0.5 nmol

Successfully multiplex with ZEN™ or TAO™ Double-Quenched Probes for lower background fluorescence, increased endpoint signal, and reduced crosstalk

Begin your project sooner with rapid shipment for most probes

Dyes and quenchers for every experiment

PrimeTime qPCR Probes can be used in demanding applications such as multiplexing and digital PCR. PrimeTime qPCR Probes are available in a wide variety of dye-quencher combinations (**Table 1**) that are compatible with common qPCR instruments.

Consistent Results

All PrimeTime probes are HPLC purified, and then quality controlled via mass spectrometry, to deliver batch-to-batch consistency and minimize the need for troubleshooting.

Table 1. Commonly used fluorophores and quenchers.

Fluorophore	Emission wavelength (nm)	Quencher
6-FAM*	520	ZEN/Iowa Black™ FQ
SUN™*	554	
JOE™*	555	
HEX*	555	
MAX™*	557	
Cy® 3	564	Iowa Black RQ†‡
ATTO™ 550§	575	
ROX	608	
Texas Red® -X	617	
ATTO 647N§	662	
Cy 5¥	668	
Cy 5.5	706	Black Hole Quencher®-3¶

* Probes with 6-FAM, SUN, JOE, MAX, or HEX fluorophores are also available as traditional, single-quenched probes with either Iowa Black FQ (license free) or Black Hole Quencher-1 (additional third-party licenses required for diagnostic use).

† Black Hole Quencher-2 (BHQ2) may also be used as a quencher (additional third-party licenses required for diagnostic use).

‡ Double-quenched probes available as a custom order.

§ ATTO-labeled probes available as a custom order.

¥ Cy 5 is also available as a single-quenched probe with BHQ2 (additional third-party licenses required for diagnostic use).

¶ Available as research use only.

Enhance your assays with double-quenched probes

Enhance your assays and reduce background with ZEN or TAO Double-Quenched Probes. Our internal quenchers are 9 bases from the 5′ fluorophore and work in combination with the 3′ Iowa Black Quencher (**Figure 1**).

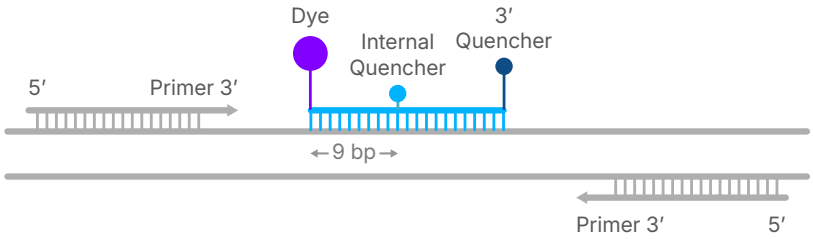

Figure 1. Schematic of a PrimeTime qPCR 5′ Nuclease Assay using a double-quenched probe that includes a dye, a ZEN or TAO internal quencher, and a 3′ quencher.

With nearly 4 times lower background fluorescence (**Figure 2A**) and approximately 30% increased signal (**Figure 2B**), ZEN Double-Quenched Probes simply perform better. See data for TAO Double-Quenched Probes at **www.idtdna.com/qPCRprobes**.

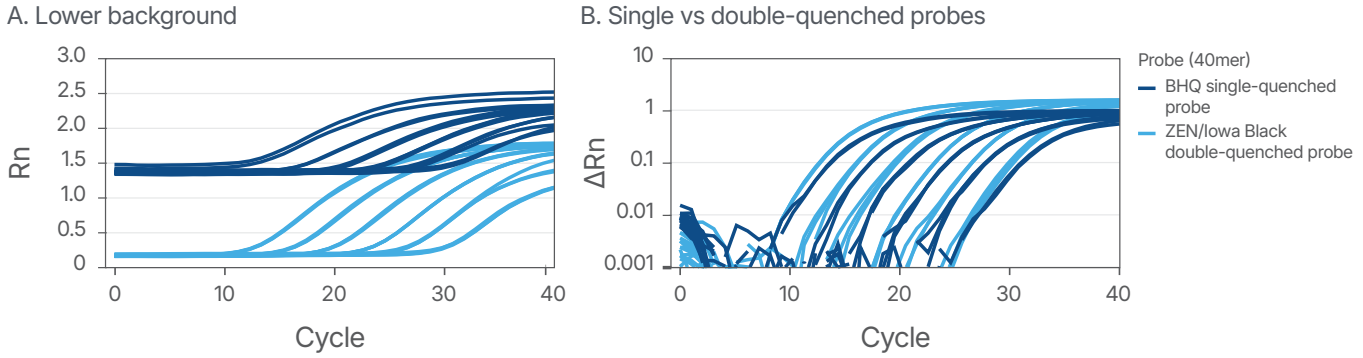

Figure 2. Increase signal from ZEN Double-quenched probes. (A) ZEN probes provide greater dye quenching, producing lower background and, therefore, higher signal intensities than standard single-quenched probes (BHQ probes). (B) ZEN probes show earlier observed C_q values compared to BHQ single-quenched probes. Three replicate reactions with each probe type (40 bases long) were run with a gBlocks™ Gene Fragment template (2 × 10^5 copies) and PrimeTime™ Gene Expression Master Mix (IDT) on the QuantStudio 7 qPCR instrument (ThermoFisher Scientific).

Quenching for long probes

Effective quenching for ZEN Double-Quenched Probes as long as 40 bases (**Figure 3**) means more effective designs, even for AT-rich targets.

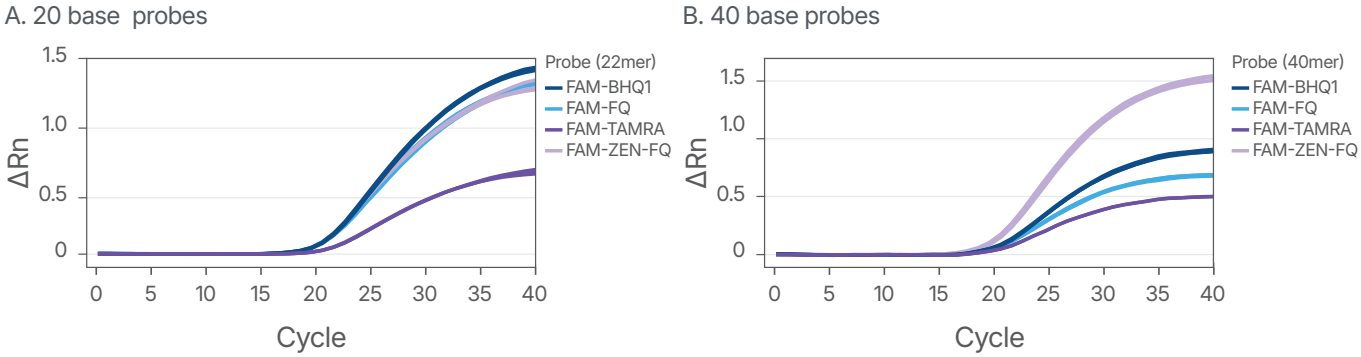

Figure 3. Only ZEN Double-Quenched Probes maintain low background signal with increasing probe length. Probes of either 20 or 40 bases with 4 different quenchers run in 3 replicate reactions with each probe type run with a gBlock Gene Fragment template (2 × 10^5 copies) and PrimeTime Gene Expression Master Mix (IDT) on the QuantStudio 7 qPCR instrument (ThermoFisher Scientific). Key: BHQ1= Black Hole Quencher-1 (Biosearch Technologies) and FQ = Iowa Black FQ (IDT).

Ordering Information

Visit **www.idtdna.com/qPCRprobes** to enter your sequence and choose modifications.

For more information, visit **www.idtdna.com/qPCRprobes**