

# PCR and qPCR research products

## High-quality products and services

The polymerase chain reaction (PCR) is a fundamental and widely used laboratory method. An enhancement of this method—qPCR, or quantitative PCR—measures the amplification of DNA in real time rather than at the end of cycling like conventional PCR does. Together, the technologies of PCR and qPCR have contributed to significant advances in research applications such as gene expression, genotyping, and cloning.

## Applications and IDT Product solutions

### Gene expression

Gene expression is the conversion of genetic information from DNA into RNA, or protein. Differences and changes in gene expression are important measures for understanding biological systems, including during normal development and abnormal discoveries.

### PrimeTime™ qPCR primer and probe sets

**PrimeTime qPCR primer and probe sets** contain fluorescently-labeled 5' nuclease probes designed to provide reliable gene expression data.



**Flexible reporter options**  
Choose from 5' reporter and 3' quencher dye combinations



**Low background**  
Multiplex confidently with double-quenched probes



**Sequence transparency**  
Know the complete sequence for every primer and probe you order

### Fluorophore and quencher available combinations

Choose from a wide range of fluorescent detection options for low background. PrimeTime™ qPCR probes are available as ZEN™ or TAO™ double-quenched probes, known to reduce background signal and crosstalk while increasing reactivity.

5' reporter dye	3' quencher dye	Mini 100 reactions <sup>†</sup>	Std 500 reactions <sup>†</sup>	XL 2500 reactions <sup>†</sup>
FAM	ZEN/Iowa Black FQ*	•	•	•
FAM	TAMRA	—	•	•
SUN™	ZEN/Iowa Black FQ*	•	•	•
HEX	ZEN/Iowa Black FQ*	•	•	•
TET	ZEN/Iowa Black FQ*	—	•	•
Cy™ 5 <sup>β</sup>	TAO/Iowa Black RQ*	•	•	•

\* ZEN/Iowa Black FQ and TAO/Iowa Black RQ are double-quenched probes that yield reliable results.

† Based on 20 µL reactions.

β Cy is a registered trademarked product sold by Cytiva.

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## PrimeTime qPCR primer sets

PrimeTime qPCR primer sets comprise a primer pair designed and premixed for realtime PCR that uses intercalating dyes, such as SYBR Green™ (Life Technologies Inc.) or EvaGreen™ (Biotium). [Dyes not included]

Create custom assays for any sequence from any species with our **PrimerQuest™ Tool**.





## PrimeTime Gene Expression Master Mix

PrimeTime Gene Expression Master Mix helps achieve quality results under various experimental conditions. This master mix is designed to support probe-based qPCR assays, expressly for gene expression analysis.

			
Achieve high efficiency qPCR with fast or standard cycling, singleplex or multiplex conditions	Obtain consistent results from overnight experiments with benchtop stability	Attain quality results at an affordable price	Inquire about license-free options

## PrimeTime qPCR probes

PrimeTime™ qPCR Probes are 5' nuclease probes, available with an assortment of reporter-dye combinations that generate reliable, high-quality gene expression analysis data with double- and single-quenched fluorescent hydrolysis probes.

			
Choose from a wide range of dyes and quenchers including several license-free combinations	Reduce costs and waste with convenient sizes, starting at 0.5 nmol	Successfully multiplex with ZEN or TAO Double-Quenched Probes for lower background fluorescence and increased endpoint signal	Begin your project sooner with rapid shipment on most probe offerings

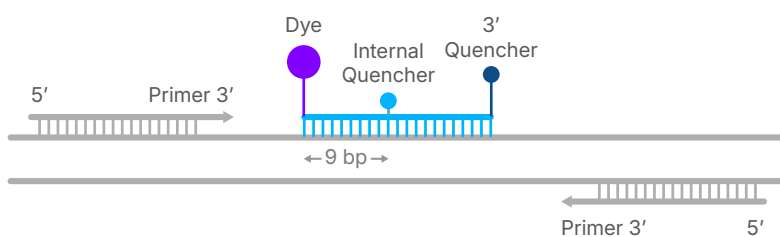


Figure 1. Schematic of a PrimeTime qPCR Probe Assay with a double-quenched probe that includes a dye, an internal quencher, and a 3' quencher.

# Genotyping

Genotyping is the process of determining the differences in genetic complement by comparing a DNA sequence at specific positions to that of another sample or reference sequence. Sequence variations can then be used as markers in linkage and association studies to determine genes relevant to specific traits or find abnormalities.

## Genotyping by qPCR

### Affinity Plus qPCR probes



**Improve SNP discrimination**  
over traditional probe use



**Use more affordable approach**  
for increasing hybridization  
specificity



**Adjust  $T_m$  with greater flexibility**  
compared to MGB™ Probes

**The Affinity Plus bases** used in our qPCR probes include up to 6 locked nucleic acid monomers, heightening structural stability and leading to increased hybridization melt temperature ( $T_m$ ).

Advantages include:

- A wide range of fluorophores to select from including FAM, SUN™, HEX, Cy® 3, Cy® 5, TEX, and TYE™ dyes
- An affordable approach to effectively increasing assay hybridization
- A way to make flexible  $T_m$  adjustments more easily than with MGB probes

## Genotyping by digital PCR

**Mini Affinity Plus™ qPCR Probes** containing locked nucleic acids are ideal for SNP genotyping, transcript variant identification, and target detection in challenging samples (FFPE tissue, biofluids). These are ideal for screening small sample sets, running on digital PCR platforms, or performing just a few reactions when finalizing probe designs.

### Mini Affinity Plus qPCR Probes

5' reporter dye(s)	Emission (nm)	Quencher(s)	Delivery amount
FAM	520		
SUN™	554	Iowa Black™ FQ	0.5 nmol
HEX	555		
Cy®5	668	Iowa Black RQ	

[Learn more.](#)

# Custom manufacturing and integration services

We share your passion and commitment to create fast and accurate molecular tools to enhance your research for improved outcomes. Learn how IDT can partner with your team to help you successfully migrate from discovery to commercialization.



## Discovery research

We'll collaborate with your product management and R&D teams as you navigate assay design and optimization, resolve licensing questions, and tackle technical setbacks.



## Development and scale-up

When you're ready to scale up manufacturing for commercialization, we'll provide your production team with the lot sizes and the packaging flexibility they need to build inventory.



## Manufacturing Transparency

We'll make sure your Quality Specialists have the kind of detailed insight they will need to ensure your product meets all required specifications.



## Commercialization

When your procurement team brings your assay to market, a dedicated IDT account manager will ensure seamless order integration and flexible supply options.

**Learn more.**

For more information, visit [idtdna.com/qPCR-and-PCR](https://idtdna.com/qPCR-and-PCR)



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