Roche Applied Science

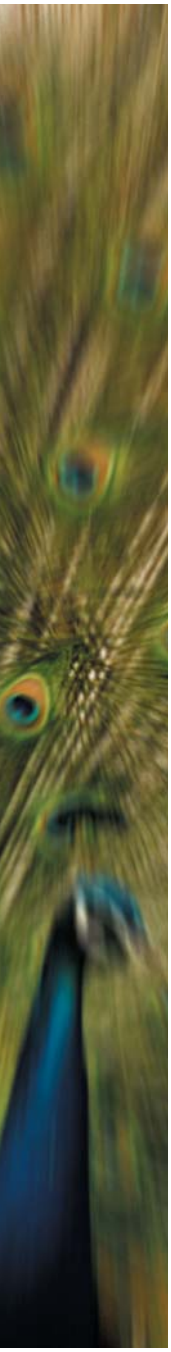
Universal ProbeLibrary

Expand Your Possibilities

Real-Time qPCR Assays Overnight

The Universal ProbeLibrary

Design a gene-expression assay and quantify virtually any transcript in a genome in only two days by using the unique combination of rapid, online assay design and prevalidated probes. Choose from seven transcriptome-specific sets of 90 probes; individual probes are also available separately.



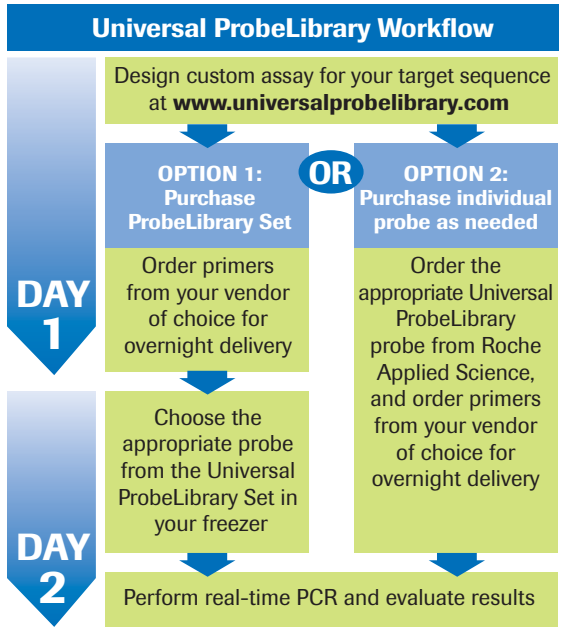
Significantly reduce assay design time — in just seconds, design specific, intron-spanning assays for multiple organisms: human, mouse, rat, *Drosophila*, *Arabidopsis*, *C. elegans*, and primates.

Store a complete set of prevalidated, specific probes in your freezer — there is no need to wait weeks for an assay or custom probe.

Attain hydrolysis probe specificity at prices comparable to SYBR Green I — without sacrificing flexibility.

Utilize standard protocols on any real-time PCR instrument — no special hardware or unique reaction conditions are required.

Obtain consistent results in gene-expression applications — probes can be used in microarray validation, gene-knockdown quantification assays, and more.



Generate over Two Million Real-Time qPCR Assays with the Universal ProbeLibrary

The unique combination of software and 165 prevalidated probes enables the design of over two million real-time PCR assays (Table 1). Over one-half million of these are intron-spanning assays. Achieve 96% or greater assay design success, and save time by minimizing assay redesign.

	Intron-Spanning Assays Available	Total Assays Available	Universal ProbeLibrary Coverage
Human	>155,000	>639,500	99%
Mouse	>140,400	>509,500	99%
Rat	>128,000	>364,000	98%
Primates	>174,500	>519,500	96%
Drosophila	>65,500	>253,500	99%
Arabidopsis	>59,500	>199,000	98%
C. elegans	>38,500	>134,000	95%
TOTAL	**>761,400**	**>2,619,000**	

▲ **Table 1: Number of real-time qPCR assays available using the Universal ProbeLibrary, and total transcriptome coverage for each organism.**

Experimental Data using Various Quant

Redefine and Revolutionize your Real-Time qPCR Assays with the Universal ProbeLibrary

Sets of 90 prevalidated hydrolysis probes allow you to quantify virtually any transcript of the human, mouse, rat, primates, *Drosophila*, *C. elegans*, or *Arabidopsis* transcriptomes. Transcripts from many other organisms can also be detected with high probability.

The Universal ProbeLibrary utilizes short hydrolysis probes of only 8-9 bases. Specificity and high melting temperature are retained by using Locked Nucleic Acid (LNA) nucleotide chemistry.

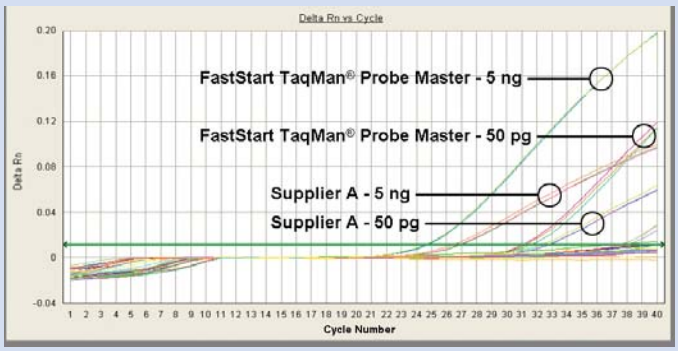
Each probe can hybridize to over 7,000 transcripts; on average, each transcript contains binding sites for up to 19 different probes. As a result, several intron-spanning assays can be designed for the same gene.

Assay specificity is attained through the combination of specific primers and the Universal ProbeLibrary probes.

Perform Universal ProbeLibrary Assays on any Real-Time PCR Platform

For optimal results when performing Universal ProbeLibrary assays on thermal block-based real-time PCR instruments, use the **FastStart TaqMan® Probe Master** (Figure 1).

This 2x-concentrated master mix enables very sensitive and specific detection and quantification in combination with Universal ProbeLibrary or other hydrolysis probes.

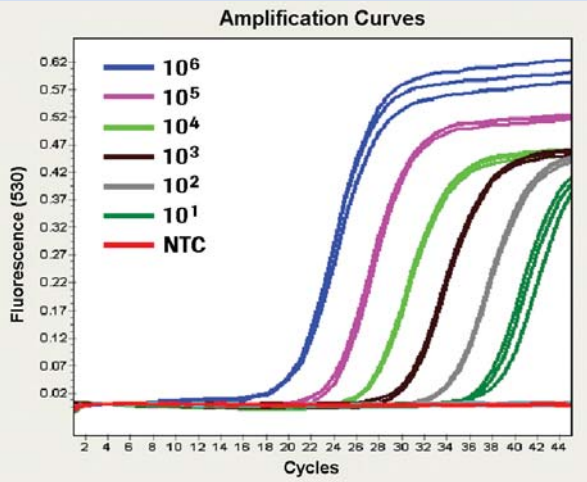


▲ **Figure 1: The Universal ProbeLibrary Software was used to design an assay to detect the GC-rich human Apolipoprotein E gene.** A 90 bp fragment with a GC-content of 60% was selected and used in combination with Probe 72 of the Universal ProbeLibrary Set, Human. A real-time qPCR was performed on an Applied Biosystems 7500 Real-Time PCR System using the FastStart TaqMan® Probe Master and a kit from another supplier. All reactions were performed in duplicate; the ROX reference dye was applied in every reaction. **Result:** The reactions with the **FastStart TaqMan® Probe Master** and Probe 72 from the **Universal ProbeLibrary Set, Human** produced the best sensitivity.

titative PCR Platforms

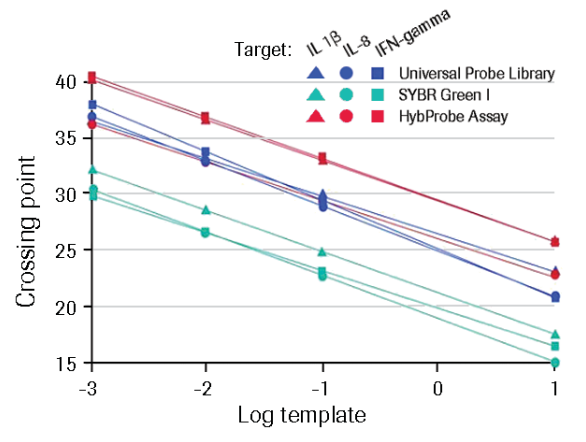
Perform Universal ProbeLibrary Assays on all Roche LightCycler® Instruments

For Universal ProbeLibrary assays on the LightCycler® 2.0 and 1.5 Instruments, use the **LightCycler® TaqMan® Master** to achieve highest sensitivity combined with the convenience of a ready-to-use master mix (Figure 2).



▲ **Figure 2: Sensitivity down to 10 copies is shown for a Universal ProbeLibrary assay targeting the β-2-microglobulin reference gene.** All samples were run in triplicate. The graph shows 10-fold serial dilutions of *in vitro*-transcribed RNA, ranging from 10^6 to 10^1 copies (NTC = no template control). The assay was performed using the LightCycler® TaqMan® Master qPCR master mix on the LightCycler® 2.0 Instrument.

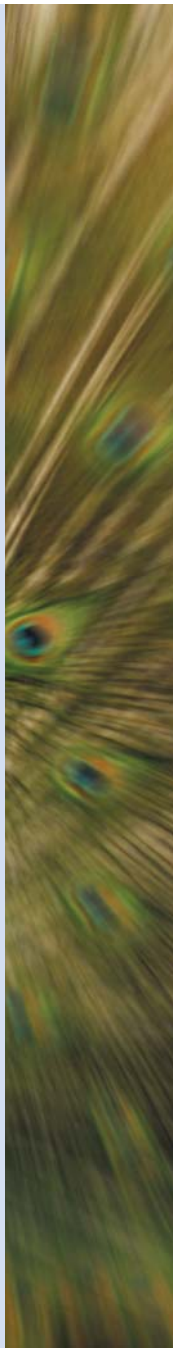
Comparison of the performance of Universal ProbeLibrary assays with other detection formats on the LightCycler® 2.0 Instrument shows that a high degree of sensitivity, linearity, and fluorescent signal is reproducibly achieved (Figure 3).



▲ **Figure 3: Comparison of linearity of different detection formats.** Assays were run on the LightCycler® 2.0 Instrument. The Universal ProbeLibrary assays were performed using the LightCycler® TaqMan® Master.

LightCycler® TaqMan® Master — the choice for laboratories that want to maximize the sensitivity of their LightCycler® 2.0 or 1.5 Instrument.

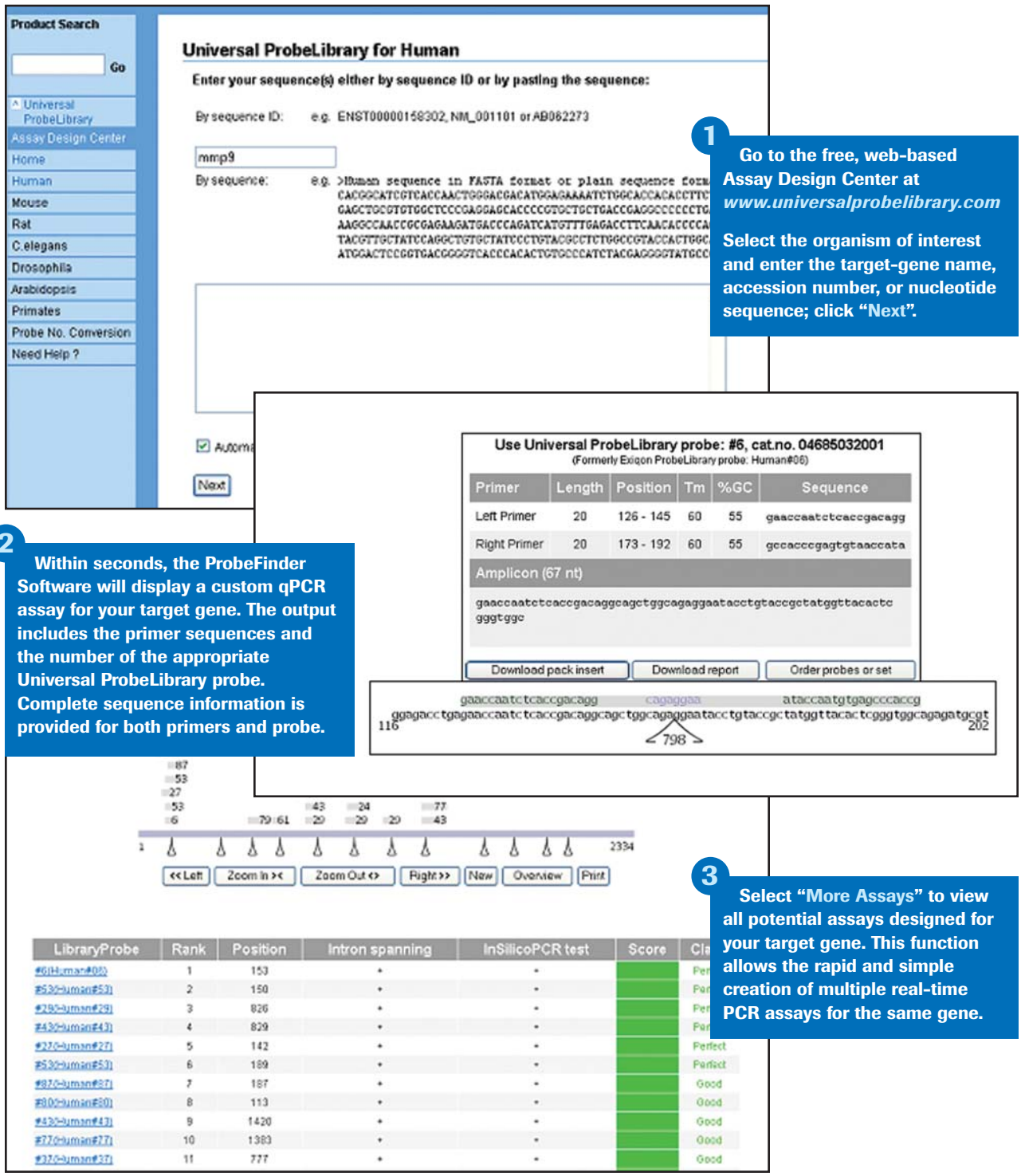
- Minimize primer-dimer formation with this hot start master mix.
- Save time by eliminating the need for $MgCl_2$ optimization.
- Achieve high sensitivity — detect as little as 3 pg genomic DNA (~one copy).
- Ensure success with a reagent specifically optimized for LightCycler® 2.0 or 1.5 Instruments.



Design a Customized Gene-Expression Assay in Three Simple Steps

The starting point for design of a real-time qPCR assay resides in the **Universal ProbeLibrary Assay Design Center**. The core component is the free-access, web-based **ProbeFinder Software**.

Use this software to create customized real-time PCR assays for your gene of interest in seconds.



Ordering Information

Assay Design with the Universal ProbeLibrary Product Family

Choose from seven different organism-specific Universal ProbeLibrary Sets. Each set contains 90 different prevalidated probes, each in an amount sufficient for 250 assays at standard 50 µl volumes. Individual vials for all 165 probes, each sufficient for 500 (50 µl) reactions, can also be ordered at ***www.universalprobelibrary.com***

Product	Cat. No.	Pack Size	List Price ($)
Universal ProbeLibrary Probes, 1-165†	(varies)	500 (50 µl) reactions	180.00
Universal ProbeLibrary Set, Human†	04 683 633 001	1 set	3,500.00
Universal ProbeLibrary Set, Mouse†	04 683 641 001	1 set	3,500.00
Universal ProbeLibrary Set, Rat†	04 683 650 001	1 set	3,500.00
Universal ProbeLibrary Set, Primates†	04 683 617 001	1 set	3,500.00
Universal ProbeLibrary Set, *Drosophila*†	04 683 625 001	1 set	3,500.00
Universal ProbeLibrary Set, *C. elegans*†	04 683 609 001	1 set	3,500.00
Universal ProbeLibrary Set, *Arabidopsis*†	04 683 595 001	1 set	3,500.00
Universal ProbeLibrary Control Set	04 696 417 001	1 set	275.00

For more information about the Universal ProbeLibrary, visit ***www.universalprobelibrary.com*** or contact your local Roche representative.

Real-Time qPCR with the LightCycler® 2.0 and 1.5 Instruments

Product	Cat. No.	Pack Size
LightCycler® TaqMan® Master	04 535 286 001	1 kit for 96 reactions

Real-Time qPCR with the FastStart Product Family

Product	Cat. No.	Pack Size
FastStart TaqMan® Probe Master (Rox)‡§	04 673 450 001	2.5 ml (2 x 1.25 ml) for 100 (50 µl) reactions
	04 673 468 001	12.5 ml (10 x 1.25 ml) for 500 (50 µl) reactions
	04 673 476 001	50 ml (10 x 5 ml) for 2,000 (50 µl) reactions
FastStart TaqMan® Probe Master‡§	04 673 409 001	2.5 ml (2 x 1.25 ml) for 100 (50 µl) reactions
	04 673 417 001	12.5 ml (10 x 1.25 ml) for 500 (50 µl) reactions
	04 673 433 001	50 ml (10 x 5 ml) for 2,000 (50 µl) reactions

Reverse Transcription with the Transcriptor Product Family

Product	Cat. No.	Pack Size
Transcriptor First Strand cDNA Synthesis Kit†	04 379 012 001	1 kit for 50 reactions
Transcriptor Reverse Transcriptase†	03 531 317 001	25 reactions
	03 531 295 001	50 reactions
	03 531 287 001	200 reactions

For more information about our products for PCR and RT-PCR, visit ***www.roche-applied-science.com/pcr***

Products for Gene Knockdown

Product	Cat. No.	Pack Size
X-tremeGENE siRNA Dicer Kit	04 579 020 001	1 kit (10 reactions)
X-tremeGENE siRNA Transfection Reagent	04 476 093 001	1 ml (400 transfections in 24-well plates)
	04 476 093 001	Multi-pack 5 x 1 ml (2,000 transfections)

For more information about our products for gene knockdown, visit ***www.roche-applied-science.com/geneknockdown***

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