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UltraScript® 2.0 Reverse Transcriptase

Product description

UltraScript® 2.0 Reverse Transcriptase (RTase) is a robust and highly thermostable modified MMLV reverse transcriptase engineered for superior cDNA synthesis speed, yield and representation from a wide range of RNA sample types.

UltraScript® 2.0 Reverse Transcriptase is provided with an advanced 5x buffer containing enhancers, dNTPs and MgCl₂ designed to give sensitive and efficient cDNA synthesis from a broad range of RNA input amounts. As oligos are not included, users have the flexibility to define their own priming strategy.

UltraScript® 2.0 Reverse Transcriptase is not inhibited by ribosomal and transfer RNAs, making total RNA an ideal substrate. The RTase can be used with 20 pg to 3.5 µg total RNA or oligo(dT) purified mRNA, however, the optimal template concentration will ultimately be determined by what oligos are used.

The RTase is blended with an advanced RNase inhibitor preventing degradation of RNA by contaminating RNase.

Quality control

PCR Biosystems operates under an ISO 13485 certified Quality Management System. Our products are extensively tested and undergo a comprehensive, multi-step quality control process according to ISO 13485 standards, to ensure optimum performance, consistency and traceability.

Pack size	5x UltraScript® Buffer	UltraScript® 2.0 (200 U/µL) with RNase inhibitor
10 000 units	1 x 200 µL	2 x 25 µL
40 000 units	4 x 200 µL	2 x 100 µL

Shipping and storage

On arrival the kit should be stored between -30 °C and -20 °C. If stored correctly, the kit will retain full activity until the indicated expiry date. Avoid exposure of the stock solution to frequent temperature changes and limit handling at room temperature to the necessary minimum. Do not store the mix once it is combined with the RTase.

Technical support

Scan or click the QR codes for helpful cDNA synthesis tips and answers to frequently asked technical questions. For further technical support, please email technical@pcrbio.com with the following information:

- Amplicon size
- Reaction setup
- Cycling conditions
- Screen grabs of amplification traces and melting profile



TIPS & TRICKS



FAQS

Product Use: Unless we agree otherwise in writing, the Goods we supply are provided:

1. For research purposes only and you should not use or rely on the Goods for diagnostic purposes. If you wish to use the Goods in a regulatory approved medical device, please contact us so that we may consider this and discuss it further with you.
2. Subject to our standard terms and conditions found at <https://pcrbio.com/terms-conditions/>.

Important considerations

5x UltraScript® Buffer: Contains 15 mM MgCl₂, 5mM dNTPs, enhancers and stabilizers. Adding further enhancers or MgCl₂ to the reaction is not recommended. The buffer composition has been optimised to generate high yield, non-biased cDNA for downstream applications.

Primers: Suggested primer concentrations are listed in the table below. For non-biased, non-specific amplification, we recommend using both random hexamers and oligo-dT₁₈ (user must supply primers).

Oligo Type	Reaction Concentration	10x Stock Concentration
Specific Primers	0.1 µM	1 µM
Random Hexamers	1 - 5 µM	10 - 50 µM
Oligo(dT) ₁₈	50 - 500 nM	0.5 - 5 µM

Template: Use 20 pg to 3.5 µg total RNA or oligo(dT) purified mRNA for accurate quantification. Additional RNA is not recommended for quantification, as total reverse transcription is not guaranteed. As concentrations of target sequences will vary, users are encouraged to perform a template titration to find the optimal concentration for their application.

Optional preincubation: Incubating template with primers prior to reverse transcription can increase the amount of cDNA, however this step is not necessary for accurate quantification. If preincubation is desired, incubate template with primers for 2 minutes at 70 °C, then rapidly cool to 4 °C, before adding to reaction.

Incubation temperature: We recommend incubating with a temperature of 50-55 °C for 10-30 minutes for most applications. Where regions of interest contain high secondary structure (>65% GC), incubation temperatures of up to 70 °C may be used, but this will reduce the activity of the enzyme and may result in less total cDNA. The same temperature should be used when comparing samples.

PCR & qPCR setup: UltraScript® 2.0 contains a high concentration of RTase. Because excess RTase can inhibit DNA polymerase activity, we strongly recommend diluting the cDNA 10x-100x when it is to be used in PCR or qPCR reactions, even for low copy number gene expression analysis.

Reaction setup

1. Allow 5x UltraScript® Buffer to thaw, briefly vortex.
2. Prepare a master mix based on the following table. Insert reagents in sequence listed:

Reagent	20 µL reaction	Final concentration	Notes
5x UltraScript® Buffer	4 µL	1x	
UltraScript® 2.0 (200 units/µL) with RNase inhibitor	1 µL		Add before total RNA as RNase inhibitor is blended with RTase
20 pg to 3.5 µg Total RNA or oligo(dT) purified mRNA	X µL		
10x Primer Mix	2 µL	1x	See Primers section
PCR grade dH ₂ O	Up to 20 µL final volume		

No RT control setup (recommended for qPCR)

Reagent	20 µL reaction	Final concentration	Notes
5x UltraScript® Buffer	4 µL	1x	
20 pg to 3.5 µg Total RNA or oligo(dT) purified mRNA	X µL		Use equal amount as in step 2
10x Primer Mix	2 µL	1x	Use equal amount as in step 2
PCR grade dH ₂ O	Up to 20 µL final volume		

Incubation and enzyme denaturation

4. Incubate at 50-55 °C for 10-30 minutes. Longer incubation times increase cDNA yield.
5. Incubate at 95 °C for 10 minutes to denature RTase.