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Volcano3G® RT-PCR Probe 2x Master Mix

#6101, Version 6, May 21, 2021
Store at -20°C

Contents

Volcano3G® RT-PCR Probe 2x Master Mix contains all components necessary for a successful and reliable real-time RT-qPCR in all standard PCR cyclers, including dNTPs and an optimized reaction buffer.
An aptamer-based hot-start formulation of the Volcano3G® DNA polymerase prevents false amplification. Temperatures above 50°C cause the aptamer's secondary structure to melt and will set-free the polymerase.

Applications

- Rapid detection and identification of RNA & DNA targets
- Reverse transcription qPCRs (RT-qPCRs)
- qPCRs

Experimental recommendations for first use:

- Run a PCR with a temperature gradient at the RT-step and annealing step in order to find the optimal temperature for your assay.
- Most RT-PCR assays work well with a RT-cycling step consisting of a short denaturation followed by incubation at 58-70°C and subsequent PCR cycling.

Quality Control Assays

RT-PCR activity: Volcano3G® RT-PCR Probe Mix is tested for a successful RT-qPCR performance. A 151 bp fragment (HPRT1 mRNA) is amplified from human total RNA extract and the linearity of amplification over a specified serial dilution is demonstrated. The activity of the Volcano3G® DNA polymerase is monitored and adjusted to a specific DNA polymerase activity using an artificial DNA template and DNA primer. Enzyme concentration is determined by protein-specific staining. Please inquire more information at info@mypols.de for the lot-specific concentration.
No contamination has been detected in standard test reactions.

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Recommendations for RT-PCR/ Reaction Setup

RT-PCR/PCR Mix

Component	Volume	Final concentration
Volcano3G® RT-PCR Probe 2x Master Mix	12.5 µl	1x
Primer forward (10 µM)	1.25 µl	500 nM (50-1000 nM)
Primer reverse (10 µM)	1.25 µl	500 nM (50-1000 nM)
Probe (10 µM)	x µl	50-1000 nM
Template/Sample extract*	y µl	>0.1 ng (0.1-2500 ng)
Nuclease-free water	up to 25µl total reaction vol.	

Keep all components on ice.
Spin down and mix all solutions carefully before use.
* Recommended template concentration should be 0.004 ng/µl – 0.1 µg/µl (of total RNA or genomic DNA).

Typical RT-PCR protocol

RT cycling (10 cycles)		
Denaturation	95°C	3 sec
Reverse transcription* (temperature to be optimized)	58-70°C	60 sec
PCR cycling (35-50 cycles)		
Denaturation	95°C	10 sec
Annealing/Extension**	58-70°C	50 sec
Hold	<10°C	hold

* Volcano3G® DNA polymerase allows "zero-step" RT-PCRs directly from RNA templates (without an isothermal reverse transcription step), as reverse transcription also takes place simultaneously with DNA amplification during the cycled PCR elongation step. Thus a reverse transcription step is optional and can be omitted in some cases.
**A new RT-PCR is ideally established by running a temperature gradient in order to find the best reverse transcription / annealing / extension temperature for each primer pair. The annealing temperature of a primer is strongly influenced by its nucleic acid sequence and the reaction buffer composition (salts and pH). Since RNA:DNA hybrids are typically more stable than DNA:DNA hybrids, the annealing temperature in the RT-step can be higher than in during PCR cycling.
Volcano3G® DNA polymerase is fully thermostable and most active between 55-95°C.

Important notes

- Volcano3G® RT-PCR Probe 2x Master Mix works very well also for DNA amplification assays
- This master mix is optimized for an amplicon size between 60- 300 bp.
- Minimize the number of freeze-thaw cycles by storing in aliquots. For a day-to-day use, we recommend keeping an aliquot at 4°C.

References

Volcano3G® DNA polymerase is based on:
Structure and Function of an RNA-Reading Thermostable DNA Polymerase. Angew. Chem. Int. Ed., 2013; 52: 11935–11939. Blatter, N., Bergen, K., Nolte, O., Welte, W., Diederichs, K., Mayer, J., Wieland, M. and Marx, A.

Material Safety Data (MSDS)

According to OSHA 29CFR1910.1200, Australia [NOHSC:1005, 1008 (1999)] and the EU Directives 67/548/EC, 1999/45/EC and 1272/2008 (CLP Regulation) any products which do not contain more than 1% of a component classified as dangerous or hazardous nor more than 0.1% of a component classified as carcinogenic, do not require a MSDS. However, we recommend the use of gloves, lab coats and eye protection when working with these or any other chemical reagents. myPOLS Biotec takes no liability for damage resulting from handling or contact with this product. This product is not hazardous, not toxic, not IATA-restricted. Product is not from human, animal or plant origin. The source of the product is recombinant protein expression in *E. coli*. The product is for research use only and may be used for *in-vitro* experiments only.