q•Taq DNA Polymerase Kit with 10X Buffer A or B

for in vitro use only

Protocol

1. Thaw and then centrifuge all kit components
2. Prepare your reactions using the Recommended Reaction Mix
3. Centrifuge your samples
4. Perform PCR using the Recommended Cycling Settings

Recommended Reaction Mix

Component	Conc.	Amount	Final Conc.
q•Taq*	5 U/µL	0.2 - 0.5 µL	1 - 2.5 U
Buffer A or B	10X	5 µL	1X
$MgCl_2$	25 mM	3 - 5 µL	1.5 - 2.5 mM
dNTP mix	20 mM	0.5 µL	0.2 mM
Primer, F	10 pmol/µL	0.5 - 1.5 µL	100 - 300 nM
Primer, R	10 pmol/µL	0.5 - 1.5 µL	100 - 300 nM
Template DNA		5 - 500 ng	0.1 - 10 ng/µL
Enhancer	10X	0 - 15 µL	0 - 3X
Nuclease-free H_2O		variable	
Total		50 µL	

** q•Taq is suitable for amplicons up to 3kb. For amplification of larger DNA fragments, use qARTA QHMM mixes.*

Recommended Cycling Settings

Cycle Step	Temp (ºC)	Time	Cycles
Initial denaturation	95	3 - 5 min	1
Denaturation	95	30 - 60 s	26 - 35
Annealing	50 - 68*	30 - 60 s	
Extension	72	1 min/kb	
Final extension	72	5 - 10 min	1

** Annealing temperature is 2 -6 ºC lower than T_M of primers.*

Estimating primer melting temperature:
For primers containing less than 25 nucleotides, $T_M = 4 (G + C) + 2 (A + T)$, where G, C, A, T represent the number of respective nucleotides in the primer. If primers contain more than 25 nucleotides specialized software is recommended to calculate T_M.

q•Taq Order Information

Cat. No.	Size	Conc.	No. Rxns (50 µL each)	q•Taq	10X Buffer A* (Mg^{2+} free)	10X Buffer B** (Mg^{2+} & detergent free)	25 mM $MgCl_2$	10X Enhancer	20mM dNTP Mix
QT-S	100 U	5 U/µL	40	20 µL	0.5 mL	0.5 mL	0.5 mL	0.1 mL	20 µL
QTA-500	500 U	5 U/µL	200	100 µL	2.4 mL	N/A	2.4 mL	0.1 mL	100 µL
QTB-500					N/A	2.4 mL			
QTA-1000	1000 U	5 U/µL	400	200 µL	4.8 mL	N/A	4.8 mL	0.5 mL	200 µL
QTB-1000					N/A	4.8 mL			

** Buffer A is a 10X Reaction Buffer, Mg^{2+} free: 800mM Tris-HCl, 200mM $(NH_4)_2SO_4$, 0.2% w/v Tween-20*

*** Buffer B is a 10X Reaction Buffer, Mg^{2+} and detergent free: 800mM Tris-HCl, 200mM $(NH_4)_2SO_4$*

Description

q•Taq is a highly thermostable DNA polymerase of the thermophilic bacterium *Thermus aquaticus*. The enzyme catalyzes 5'→3' synthesis of DNA and has no detectable 3'→ 5' exonuclease activity.

Definition of activity unit

One unit is defined as the amount of enzyme required to catalyze the incorporation of 10 nmol of deoxyribonucleotides into a polynucleotide fraction in 30 minutes at 74ºC.

Storage and dilution buffer

50% glycerol (v/v), 20 mM Tris-HCl pH 8.7 at 25ºC, 100 mM KCl, 0.1 mM EDTA and stabilizers.

Quality control

The enzyme is free of nicking and priming activities, exonucleases and non-specific endonucleases. Activity and stability tested via functional assay. The error rate per nucleotide per cycle is ~ 2.5 x 10^{-5}; the accuracy is ~ 4 x 10^4. Estimated half life at 95ºC is 1.5 hours.

Eco-friendly shipping and storage

- Shipped at ambient temperature without ice
- Store at -20°C upon arrival

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qARTA BIO

User Protocol