Cat. No.: FTAQ-001

Fast *Taq* DNA Polymerase

(ETERBIO-EZ-FTAQ-001)

Lot:_____

Expiry Date: yy / mm / dd

Store at -20℃

DESCRIPTION

Fast *Taq* DNA Polymerase is a second-generation enzyme engineered from *Thermus aquaticus* DNA polymerase, offering faster extension rates. In addition to speed, Fast *Taq* DNA Polymerase provides higher yields and sensitivity than wild-type *Taq* DNA polymerase across a broad range of targets. Fast *Taq* DNA polymerase has 5'→3' DNA polymerase and 5'→3' exonuclease activities that lacking a 3'→5' exonuclease (proofreading) activity.

Origin
E. coli cells that carry the *polA* gene from *Thermus aquatics*

Specification
Appearance Colorless-liquid
Activity ≧5 U/μl

Functions
Deoxynucleoside triphosphate + DNA(n) = diphosphate + DNA(n+1), 5'-3' polymerase and 5'-3' exonuclease, DNA repair, recombination and replication

Reagents Supplied with Enzyme
10X Eternal *Taq* Reaction Buffer

PROPERTIES

Unit Definition
One unit is defined as the amount of enzyme that synthesizes 1 nmol of DNA within 3 minutes at 72℃

Unit Assay Conditions
1X Eternal *Taq* Reaction Buffer, 125 μM dNTPs and 15 nM primed M13 DNA

1X Eternal *Taq* Reaction Buffer
10 mM Tris-HCl (pH 8.8), 50 mM KCl, 1.5 mM $MgCl_2$, 0.1% Triton X-100

Storage Buffer
20 mM Tris-HCl (pH 8.0), 100 mM KCl, 1 mM DTT, 0.1 mM EDTA, 0.5% Tween® 20, 50% Glycerol

Molecular Weight
Theoretical: 97,000 daltons

Storage
Store at -20℃

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CERTIFICATE OF ANALYSIS

Functional Assay

Good performance in PCR was tested for amplification of 1.8 kb gene.

USAGE

1. Gently vortex and briefly centrifuge Fast *Taq* DNA Polymerase after thawing.
2. Set up each reaction as follows (Keep on ice):

Component	50 µl reaction	Final Concentration
10X Fast *Taq* Reaction Buffer	5 µl	1X
Primer A	variable	0.1–1.0 µM
Primer B	variable	0.1–1.0 µM
dNTPs	variable	200 µM
Template DNA	variable	< 1.0 µg
Fast *Taq* DNA Polymerase	0.5 µl	2.5 U/50 µl PCR
Nuclease-free water	to 50 µl	

3. Gently mix the solution a few times and spin down.
4. Perform PCR using the recommended thermal cycling conditions outlined below:
   (For maximum yield and specificity, temperatures and cycling times should be optimized for each new template target or primer pair)

Step	Temperature	Time
Initial Denaturation	95℃	3 minutes
30 Cycles	95℃	15-30 seconds
	45-68℃	15-30 seconds
	72℃	1-15 seconds/kb
Final Extension	72℃	1 minute/kb
Hold	4-10℃	

***Mg^{2+} and additives**

The optimal Mg^{2+} concentration of 1.5 mM empirically, as provided in the 1X Fast *Taq* Reaction Buffer, will generate satisfactory amplification of most amplicons. However, in some difficult targets, Mg^{2+} can be improved by increasing 0.5-1.5 mM. Amplification of some cases, reactions may be improved with additives, like DMSO.

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