DNA free-Taq DNA Polymerase

From Thermus aquaticus, recombinant (E. coli)

1. Description

Taq DNA Polymerase was originally isolated from *Thermus aquaticus*. Most of commercial *Taq* DNA Polymerase is isolated from its cloned gene expressed in *E. coli* for mass production. The *Taq* polymerase from *E. coli* has been shown to have contaminating bacterial DNA that is possibly carried over from the expression vector system and other sources used during polymerase manufacture. This residual contamination may limit the use of *Taq* DNA Polymerase in PCR reaction in certain samples. Indeed certain estimates of contamination counts in commercially available *Taq* DNA Polymerase have claimed as many as 1,000 genome equivalents of bacterial DNA per unit of enzyme.

Because XpressBio's ***DNA free-Taq* DNA Polymerase** is free of genomic and plasmid DNA from the production strain. ***DNA free-Taq*** is especially useful for 16S and 23S rDNA gene amplification, sequencing and cloning as well as for all regular applications, including PCR and primer extension. The enzyme has the following activities: 5'-3' polymerase (60 to 150 nucleotides/s; approx. 1 kb/min), 5'-3' exonuclease and 3' terminal deoxynucleotidyl transferase (addition of single dATP to the duplex DNA). ***DNA free-Taq*** DNA Polymerase incorporates modified nucleotides (dNTPαS, c7GTP, biotin-11-dUTP, digoxigenin-11-dUTP and fluorescein-12- dUTP but not biotin-16-dUTP) at high rates.

2. Features

- Absolutely free from bacterial DNA.
- Suitable buffer system for all purposes.
- High sensitivity - efficient amplification of single copy genes.
- High productivity - high yields of products.

3. Applications

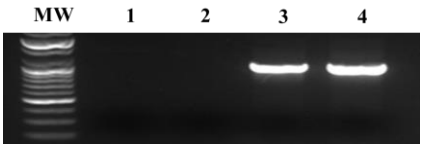
- Routine PCR, qPCR and RT-PCR
- PCR of bacterial genes due to the absence of contaminating bacterial DNA
- Amplification of single-copy genes of eukaryotic genomes
- DNA labeling reactions & TA-cloning
- Sequencing/ cycle sequencing

4. Product components

- ***DNA free-Taq* DNA Polymerase** (5 Unit/µl)
- 10X PCR Buffer I* with 20mM $MgCl_2$
- 10X PCR Buffer I* without $MgCl_2$
- 10X PCR Buffer II* with 15mM $MgCl_2$
- 100mM $MgCl_2$

*We recommend Buffer I (ammonium buffer) for increased yield of PCR products and Buffer II (potassium buffer) for increased specificity of PCR. $MgCl_2$ concentration should be optimized for each particular primer-template combination. In most of cases PCR is effective with 2.5mM of $MgCl_2$.

5. DNA free Test



PCR was performed with (positive control) and without template(NTC, no template control) in the presence of *E. coli* 16s rDNA specific primers (1.5 kb product). – 30cycles

MW - 100bp plus
Lane 1 - NTC: 1.25 unit *DFS–Taq* DNA Polymerase (XpressBio) – 30cycles
Lane 2 - NTC: 1.25 unit *DNA Free–Taq* DNA Polymerase (XpressBio) – 30cycles
Lane 3 - PC: 1.25 unit *DFS–Taq* DNA Polymerase (XpressBio) – 30cycles
Lane 4 - PC: 1.25 unit *DNA Free–Taq* DNA Polymerase (XpressBio) – 30cycles

6. Quality control

- All of XpressBio's ***DNA free-Taq* DNA polymerase** is tested for absence of bacterial DNA.
- Each lot of ***DNA free-Taq* DNA polymerase** is tested for performance in PCR runs, using different primers for amplification of sequences between 0.1 and 5 kb.
- Nuclease activity is not detected after incubation of 1ug of substrate DNA with 5 units of ***DNA free-Taq* DNA polymerase** in 1X reaction buffer.

7. Storage buffer

20mM Tris-HCl(pH 8.0), 100mM KCl, 0.5mM EDTA, 0.1mM DTT, 50% Glycerol

8. Unit definition

One unit is defined as the amount of enzyme that will incorporate 10nM of dNTP into acid-insoluble products in 30 minutes at 75℃.

9. Product List

Cat No.	Pack size	Description
CSDFT500	500 U	DNA Free-Taq DNA Polymerase (5U/ µl)
CSDFT1000	1,000 U	DNA Free-Taq DNA Polymerase (5U/ µl)
CSDFT2000	2,000 U	DNA Free-Taq DNA Polymerase (5U/ µl)
CSDFT10000	10,000 U	DNA Free-Taq DNA Polymerase (5U/ul)