Phi29 MAX DNA Polymerase

N106

Version 22.1

Product Description

Phi29 MAX DNA Polymerase is a DNA polymerase cloned from *Bacillus subtilis* phage phi29. Phi29 MAX DNA Polymerase exhibits a strong strand-displacement activity. These functions allow for unwinding and replication of DNA complex structure, and it can conduct isothermal DNA polymerization independent of thermal cycling in vitro. Phi29 MAX DNA Polymerase has a strong chain affinity, and a single polymerization can achieve a continuous polymerization extension up to 100 kb. In addition, Phi29 MAX DNA Polymerase has extremely high fidelity due to its inherent 3'→5' exonuclease activity. Its fidelity is 1,000 times higher than that of Taq DNA Polymerase, which is higher than the fidelity of most high-fidelity enzymes. This feature guarantees the high fidelity of DNA synthesis, and is very suitable for in vitro preparation of plasmids and whole-genome synthesis.

Components

Components	N106-01 (250 U)	N106-02 (1,250 U)
Phi29 MAX DNA Polymerase	25 μl	125 μl
Phi29 MAX DNA Polymerase Reaction Buffer (10 ×)	1 ml	1 ml

▲The reaction buffer contains DTT. After 10 repeated freeze-thaw cycles, please add DTT of a final concentration of 4 mM before use.

Storage

Store at -30 ~ -15℃, if long-term storage, please store below -70℃ and avoid repeated freezing and thawing; ship on dry ice.

Applications

Isothermal Amplification.

Source

Recombinant *Bacillus subtilis* phage phi29 carrying the cloned Phi29 MAX DNA Polymerase gene.

Unit Definition

One unit of activity (U) is defined as the amount of enzyme required to incorporate 0.5 pmol of dNTP into acid-insoluble precipitates within 10 min at 30℃.

Reaction Conditions

1 × Phi29 MAX DNA Polymerase Reaction Buffer, incubate at 30℃.

Self-prepared Materials

dNTP (10 mM)
Random primer
PCR instrument or water bath

Notes

For research use only. Not for use in diagnostic procedures.

Experiment Process

Take the preparation of circular plasmid samples for sequencing as an example:

The strand-displacement activity and high-fidelity polymerization activity of Phi29 MAX DNA Polymerase greatly simplify the preparation of circular plasmids for sequencing.

1. Sample preparation

   Bacterial Culture: Directly take 1 μl fresh bacterial culture for amplification.

   Colonies on the Plate: Pick the colonies (avoid the medium) and mix them in 10 μl Nuclease-free ddH_2O. Take 1 μl for amplification reaction.

   Purified Plasmids: Dilute the plasmids with Nuclease-free ddH_2O to 1 ng/μl and take 1 μl for amplification reaction.

2. Prepare the reaction system as follows:

Components	Volume
Nuclease-free ddH_2O	4 μl
Phi29 MAX DNA Polymerase Reaction Buffer (10 ×)	1 μl
Random primer (100 μM)	2.5 μl
Sample	1 μl
Total	8.5 μl

3. Incubate at 95℃ for 3 min before placing it on ice for 5 min.

4. Add the following components in the above reaction system:

Components	Volume
Product from the previous step	8.5 μl
dNTP (10 mM)	1 μl
Phi29 MAX DNA Polymerase	0.5 μl
Total	10 μl

5. Mix well by vortex and centrifuge briefly to collect the reaction solution to the bottom of the tube.

6. Incubate overnight at 30℃.

7. Incubate at 65℃ for 10 min to inactivate Phi29 MAX DNA Polymerase.

8. The Amplification products can be used for sequencing and other downstream applications after purification.