AcuGenix™ Uracil-DNA Glycosylase (UNG/UDG)-Low DNA

V01

Product Description

AcuGenix ™ Uracil-DNA Glycosylase (UNG/UDG)-Low DNA is recombinantly expressed in *Escherichia coli* with a molecular weight of 25 kDa. This enzyme catalyzes the release of free uracil from uracil-containing single-stranded and double-stranded DNA, and exhibits no activity against RNA. It can be applied to prevent contamination caused by PCR amplification products. Principle of action: When dUTP is used to replace dTTP and incorporated into DNA during PCR, amplification products containing dU bases are generated. This enzyme selectively cleaves the glycosidic bond of uracil bases in both single-stranded and double-stranded DNA, thereby degrading such PCR amplification products. Manufactured via a specialized process, this product is free of residual genomic DNA and is suitable for the development of detection reagents in biopharmaceutical applications.

Size

1 U/μL

Unit Definition

One unit (U) is defined as the amount of enzyme required to degrade 1 μg of dU-containing single-stranded DNA within 1 hour at 37°C.

Storage Buffer

20 mM Tris-HCl (pH 8.0), 150 mM NaCl, 1 mM EDTA, 1 mM DTT, Stabilizer, 50% Glycerol.

Storage

Store at -20±5°C. Vortex before use. Avoid freeze-thaw cycles.

Quality Control

1. SDS-PAGE electrophoresis purity no less than 98%.
2. Amplification sensitivity, between-batch difference, and stability.
3. One unit (1 U) of UNG completely degrades uracil-containing templates below 10^3 copies after incubation at 50 ℃ for 2 min, with no amplification products generated.
4. No exogenous nuclease activity, no exogenous endo/exonuclease contamination.

Prepare Reaction Mix

Components	Volume per Reaction	Final Concentration
10×PCR Buffer (Mg^{2+} free)	5 μL	1×
dNTPs （dATP, dGTP, dCTP）	——	200 μM
dUTP （replace dTTP）	——	200-600 μM
25 mM $MgCl_2$	2-8 μL	1-4 mM
5 U/μL Taq	0.25 μL	1.25 U
1 U/μL AcuGenix™ Uracil-DNA Glycosylase (UNG/UDG)-Low DNA	0.25 μL (0.1-0.5 μL)	0.25 U (0.1-0.5 U)
25× Primer Mix *	2 μL	1×
Template	——	< 1 μg/reaction
ddH_2O	To 50 μL	——

If used for qPCR/qRT-PCR, fluorescent probes need to be added to the reaction system. The final concentration of primers is usually 0.2 μM for better results. when the reaction performance is poor, the primer concentration can be adjusted within the range of 0.2-1 μM. The probe concentration is usually optimized in the range of 0.1-0.3 μM. Concentration gradient experiments can be performed to find the best combination of primers and probes.

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Notes

1. AcuGenix™ Uracil-DNA Glycosylase (UNG/UDG)-Low DNA can be used to eliminate contaminating dUTP-incorporated amplification products in the reaction system prior to PCR amplification, avoiding false positive results caused by carry-over product contamination.
2. AcuGenix™ Uracil-DNA Glycosylase (UNG/UDG)-Low DNA is optimized for contamination-preventive PCR, with an optimal reaction condition at 50 ℃ for 2 min and an inactivation condition at 95 ℃ for 5 min.
3. Avoid repeated freeze-thaw cycles and exposure to environments with drastic temperature fluctuations.
4. The efficiency of dUTP utilization and sensitivity to UNG enzyme varies for different genes to be amplified. If the detection sensitivity is reduced due to the use of the UNG system, adjust and optimize the reaction system accordingly. If technical support is required, please contact our company.