dUTPase

Product description

dUTP pyrophosphatase (dUTPase) is a key enzyme in DNA synthesis and widely distributed in various kinds organisms such as eukaryotes, prokaryotic cells, and viruses. The enzyme hydrolyzes dUTP to dUMP and inorganic pyrophosphate (PPi) in the cytoplasm, thereby minimizing the misinsertion of uracil in DNA synthesis, reducing the ratio of dUTP/dTTP in cells, preventing incorporation into DNA strands, and maintaining the fidelity and smooth progress of genome replication. At the same time, dUMP, a hydrolysate product of dUTP, is the substrate of TS and is a precursor raw material for the biosynthesis of dTTP in vivo.

This product is an optimized formation of heat stable dUTPases that maximize high-fidelity PCR efficiency, remove contaminated dUTPs in PCR reactions and dNTP solutions, and reduce the chance of mutation. dUTPase increases the yield, length, and fidelity of PCR products, enabling further downstream applications. These effects make dUTPase useful in PCR fidelity and yield-sensitive applications, such as cloning and subsequent recombinant protein techniques, as well as gene expression analysis (semi-quantitative RT-PCR technology and real-time PCR analysis) where small differences in product accumulation can have a significant impact on gene expression analysis. dUTPase is dUTP-specific and critical to the fidelity of DNA replication and repair.

The detailed parameters of dUTPase are as follows:

Name	dUTPase
Biological activity	10^3 U/μg
Purity	> 95% as determined by SDS-PAGE.
State	Liquid
Formulation	dUTPase is supplied in 20 mM Tris-HCl (pH 8.2), 1mM DTT, 0.1 mM EDTA, 100 mM KCl, 0.1% Nonidet P40, 0.1% Tween 20 and 50% glycerol at a concentration of 1000 U/μL of the enzyme.
Concentration	1 mg/mL
Sequence	The sequence cannot be shared.

Table 1 Detailed parameters of dUTPase.

Components and storage conditions

Components	K1108-10,000 U	K1108-50,000 U
dUTPase (1 mg/mL)	10 μL	50 μL
Storage buffer	1 mL	5 mL
Store the components at -20°C for 12-18 months.		

Experimental manipulation

1. dUTPase can be added directly to PCR reaction mixtures to promote PCR effects. Recommended concentration: 10 ng of dUTPase per 50 μL reaction system.

   For example, use dUTPase when employing our product hyPerFUsion® high-fidelity DNA polymerase (K1032) in PCR amplification.

   First dilute the dUTPase to 10 ng/μL using the storage buffer. Add 99 μL storage buffer to1 μL dUTPase (1 mg/mL), then mix well.

COMPONENT	REACTION (50 μL)
ddH2O	add to 50 μL
5×HyPerFUsion buffer	10 μL
2.5 mM dNTPs	4 μL
10 μM Forward Primer	2 μL
10 μM Reverse Primer	2 μL
Template	variable
HyPerFUsion DNA polymerase(1U/μL)	1 μL
dUTPase(10 ng/μL)	1 μL

Notes

1. Unit Definition: One unit of enzyme catalyzes hadrylazation of 10 nanomoles of dUTP to dUMP in one hour at 85 Centigrade.
2. This product is for scientific purposes only.

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