

PBCV DNA ligase (25 U/ μ L)

Product Description

PBCV DNA Ligase, also known as SplintR ligase, PBCV-1 DNA Ligase, or Chlorella virus DNA ligase, is an ATP-dependent DNA ligase that efficiently catalyzes the ligation reaction of two adjacent DNA strands that are complementary to a single stranded RNA. In these two adjacent DNA strands, the one providing the 3' hydroxyl group is called the acceptor DNA strand, while the one providing the 5' phosphate group is called the donor DNA strand. During this ligation process, a complementary RNA strand acts as a "splint" or "scaffold" for the two DNA strands. The activity of PBCV DNA Ligase is much higher than that of traditional T4 DNA ligase and shows a strong affinity for DNA substrates with RNA as a splint (apparent $K_m = 1$ nM, where a smaller K_m value indicates a stronger affinity). It can detect unique RNA species at the subnanomolar level in complex mixtures, making it suitable for target enrichment processes in applications such as high-sensitivity RNA detection, next-generation sequencing, and molecular diagnostics.

Specifications

Cat.No.	14962ES80 / 14962ES90
Size	1,250 U / 5,000 U
Source	The DNA Ligase gene from PBCV-1 originating from <i>Chlorella virus</i> expressed in <i>E.coli</i> .
Molecular weight	34 KD
Unit Definition	One unit is defined as the enzyme amount required to achieve at least 50% completion of the ligation of 2 pmol FAM-labeled DNA:RNA hybrid substrate within 15 min at 25°C in 1×PBCV Ligase buffer.
Storage Buffer	10 mM Tris-HCl, 300 mM NaCl, 1 mM DTT, 0.1 mM EDTA, 50% (v/v) Glycerol pH 7.4 @ 25°C
Reaction Conditions	50 mM Tris-HCl, 10 mM MgCl ₂ , 1 mM ATP, 10 mM DTT, pH7.5 @25°C
Concentration	25 U/ μ L
Purity	>95% (SDS PAGE)
Heat Inactivation	65°C, 20 min

Components

Component No.	Name	14962ES80	14962ES90
14962-A	PBCV DNA ligase (25 U/ μ L)	50 μ L	200 μ L
14962-B	10 x PBCV Ligase buffer	1 mL	1 mL

Product Application

1. Detection of microRNAs and other small RNAs based on probe method.
2. Connecting single-stranded DNA through "clamp" fixation by complementary RNA sequences.
3. Using DNA probes to achieve the detection of specific RNA.
4. Detection of SNP or Alternative Splicing.
5. RASL-seq analysis.

Storage

This product should be stored at -25 to -15°C for 2 years.

Instructions

Recommended configuration application reaction and system:

Components	Volume
10 x PBCV Ligase buffer	2 µL
Substrate(1 µM)	2 µL
PBCV DNA ligase (25 U/µL)	1 µL
H ₂ O	15 µL
Total	20 µL
25°C reaction for 15-60 min; 65°C inactivation for 20 min.	

Notes

1. This product is active within the ATP concentration range of 10 µM - 1 mM and pH range of 6.5 - 9. Optimal activity is observed under conditions of $Mg^{2+} > 5$ mM and pH between 7.5 and 8.0. Higher temperatures (up to 37°C) and supplementation with 5 mM Mn^{2+} can enhance enzyme activity. Reaction is inhibited by salt concentrations exceeding 100 mM.
2. Please operate with lab coats and disposable gloves, for your safety.
3. This product is for research purposes only.