



## SD DNA Polymerase

### User's Instruction

#### Description

SD DNA Polymerase is a novel artificial thermostable polymerase with strong strand displacement activity, but lacking 5'-3' exonuclease activity. Unlike natural enzymes with strong strand displacement activity such as Phi29 or Bst polymerase, which are active only below 68°C, SD DNA polymerase is stable up to 90°C. Therefore, SD DNA polymerase is particularly effective for PCDR, a new PCR assay that incorporates strand displacement, particularly useful in creating more sensitive qPCRs.

#### Kit Contents

	1,000U
1. SD DNA Polymerase (10 U/μl)	100 μl
2. 4xSD Buffer (Mg <sup>2+</sup> free)	1 mlx2
3. 100 mM Mg <sup>2+</sup>	1 ml

#### Features

- Strong strand displacement activity and polymerase activity.
- Stable at high temperature.
- Tolerable to ethanol, guanidine salt, heparin, serum and plant polysaccharide polyphenols.
- Ideal for long and complex templates amplification.

#### About PCDR

Polymerase chain displacement reaction (PCDR) uses multiple nested primers in a rapid, capped, one-tube reaction that increases the sensitivity of normal quantitative PCR (qPCR) assays. In PCDR, when extension occurs from the outer primer, it displaces the extension strand produced from the inner primer by utilizing a polymerase that has strand displacement activity. This allows a greater than 2-fold increase of amplification product for each amplification cycle and therefore increased sensitivity and speed over conventional PCR. Increased sensitivity in PCDR would be useful in nucleic acid detection



for viral diagnostics.

## Protocol (For PCDR)

1. Set up PCDR reaction as the following table (take 50  $\mu$ l per well as an example):

Component	Volume
4xSD Buffer ( $Mg^{2+}$ free)	12.5 $\mu$ l
SD DNA Polymerase (10 U/ $\mu$ l)	0.25 $\mu$ l
100 mM $Mg^{2+}$	1.5 $\mu$ l
dNTP Mixture (10 mM each)	1 $\mu$ l
Template DNA	X $\mu$ l
Inner Primer each (10 $\mu$ M)	0.5-2 $\mu$ l
Outer Primer each (10 $\mu$ M)	0.5-2 $\mu$ l
ddH <sub>2</sub> O	up to 50 $\mu$ l

### Note:

- The amount of  $Mg^{2+}$  is usually around 2-3 mM in PCDR systems.
- The amount of SD DNA Polymerase is usually around 2.5 U in a 50  $\mu$ l reaction system.

2. Thermocycling Conditions

Number of Cycles	Temperature	Time
1 <sup>st</sup> Cycle	90°C	1min
25-35 Cycles	90°C	10s
	50-60°C	20s
	68°C	2kb/min
Last Cycle	68°C	2min

## Storage

Minimum shelf life is 2 years at -20°C.