Champagne Taq DNA Polymerase

Catalog # P122-d1/d2/d3

Version 5.1

Vazyme biotech co., ltd.

1. Introduction

Champagne Taq Antibody is a monoclonal antibody which can inhibit Taq DNA polymerase activity when bound to it. Due to its unique thermo stability and high affinity to Taq DNA polymerase, Champagne Taq Antibody blocks Taq DNA polymerase activity at temperatures up to 65˚C but releases fully active polymerase after heat treatment at 95˚C for 30 seconds.

Champagne Taq DNA Polymerase is recombinant Taq DNA polymerase contained Champagne Taq antibody that blocks polymerase activity at ambient temperatures. Activity is restored after the denaturation step in PCR cycling at 95˚C , thereby providing an automatic “hot start” for Taq DNA polymerase in PCR, which provide increased sensitivity, specificity, and yield, while allowing assembly of reactions at room temperature. The use of this antibody helps reduce PCR optimization requirements, reaction set-up time and effort, handling of reaction components, and contamination risk. No modifications to PCR reactions or protocols are necessary.

Champagne Taq DNA Polymerase has a 5’→3’ DNA polymerase activity and a 5’→3’ exonuclease activity, and lacks a 3’→5’ proofreading function. The obtained PCR products are compatible with ClonExpress II One Step Cloning Kit (C112-C113), and can be directly used for cloning into T-Vectors as most PCR products amplified with Taq DNA polymerase have one A at the 3'-terminus.

2. Package Information

Components	P122-d1 500 U (2.5 U/μl)	P122-d2 500 U (5 U/μl)	P122-d3 500U (10 U/μl)
10 × Champagne Taq Buffer (Mg^{2+} plus)	2 ml	2 ml	2 ml
dNTP Mix (10 mM each)	400 μl	400 μl	400 μl
Champagne Taq DNA Polymerase (2.5 U/μl)	200 μl	------	------
Champagne Taq DNA Polymerase (5 U/μl)	------	100 μl	------
Champagne Taq DNA Polymerase (10 U/μl)	------	------	50 μl

3. Storage

Store at -20˚C .

4. Unit Definition

One unit is defined as the amount of enzyme that will incorporate 10 nmol of dNTP into acid-insoluble material in 30 minutes at 74˚C , using activated salmon sperm DNA as template.

5. Protocol

1. General reaction mixture for PCR:

ddH_2O	to 50 μl
10 × Champagne Taq Buffer (Mg^{2+} plus) [a]	5 μl
dNTP Mix (10 mM each)	1 μl
5 × PCR Enhancer [b]	optional
Template DNA [c]	optional
Primer 1 (10 μM)	2 μl
Primer 2 (10 μM)	2 μl
Champagne Taq DNA Polymerase (2.5 U/μl)	1 μl

a. 1.5–2.0 mM of Mg^{2+} is optimal for most PCR amplification. The final Mg^{2+} concentration of 1× Taq Buffer is 2.0 mM which guarantees successful amplification of most amplicons. However, Mg^{2+} can be further optimized in 0.5 or 1.0 mM increments using the 25 mM $MgCl_2$ solution.

b. PCR Enhancer can be used to improve the amplification efficiency when amplify template with complex secondary structure, such like GC-rich sequences. Note that too much PCR Enhancer may reduce the amplification fidelity. So, we recommend to use the Enhancer only when the GC content is more than 60% and normal amplification cannot be achieved with optimized condition.

c. The recommended amount of DNA template for a 50 μl reaction is as follows:

Human Genomic DNA	1j 500 ng
Bacterial Genomic DNA	1j 100 ng
λ DNA	0.1j 1 ng
Plasmid DNA	0.1j 1 ng

2. Program for a routine PCR:

95°C	30 sec (Pre-denaturation)	
95°C	30 sec	
55°C*	30 sec	30-35 cycles
72°C	60 sec/kb	
72°C	7 min (Final extension)	

*Annealing temperature is based on the Tm of the primer pair and is typically 1-2°C lower than the calculated Tm.

6. Primer Designing Notes

1. Choose C or G as the last base of the 3' end of the primer;
2. Avoid continuous mismatch at the last 8 bases of the 3' end of the primer;
3. Avoid hairpin structure at the 3' end of the primer;
4. Tm of the primers should be between 55°C j 65°C ;
5. 5' adding sequence should not be included when calculate Tm of the primers;
6. GC content of the primers should be between 40%j 60%;
7. Tm and GC content of forward and reverse primers should be as similar as possible.