PCR Enhancer

P021

Version 23.1

Product Description

For conventional PCR analysis, GC-rich DNA fragments are often difficult to amplify due to their robust secondary structure. Under conventional PCR conditions, it is difficult for DNA polymerase to intervene in the secondary structure of GC-rich DNA. PCR Enhancer is a mixed additive composed of multiple components, which can effectively reduce the melting temperature of GC-rich templates and templates with complex secondary structures. PCR Enhancer is compatible with almost all DNA polymerase amplification systems. When conventional PCR program cannot effectively amplify the target fragment, adding PCR Enhancer can often get unexpected results.

Components

Components	P021-01	P021-02
PCR Enhancer	500 µl	5 × 500 µl

▲ The product may reduce the fidelity of PCR. Therefore, it should be used with caution when performing high-fidelity PCR. The concentration of the product is 5 ×, and the recommended final concentration is 1 ×.

Storage

Store at -30 ~ -15°C and transport at ≤0°C.

Applications

It is applicable for GC-rich templates and templates with complex secondary structures.

Notes

For research use only. Not for use in diagnostic procedures.

Experiment Process

Take the following reaction as an example, using *Taq* DNA Polymerase to amplify fragments with the GC content of 72%.

Reaction System

Components	Volume
ddH_2O	To 50 µl
10 × Taq Buffer (Mg^{2+} plus)	5 µl
dNTP Mix (10 mM each)	1 µl
PCR Enhancer	10 µl
Template DNA[a]	x µl
Primer 1 (10 µM)	2 µl
Primer 2 (10 µM)	2 µl
Taq DNA Polymerase (5 U/µl)	0.4 µl

a. Optimal reaction concentration varies in different templates. In a 50 µl system, the recommended template usage is as follows:

Template Types	Amount
Animal & Plant Genomic DNA	0.1 - 1 µg
E. coli Genomic DNA	10 - 100 ng
cDNA	1 - 5 µl (≤1/10 of the total volume of PCR system)
Plasmid DNA	0.1 - 10 ng
λDNA	0.5 - 10 ng

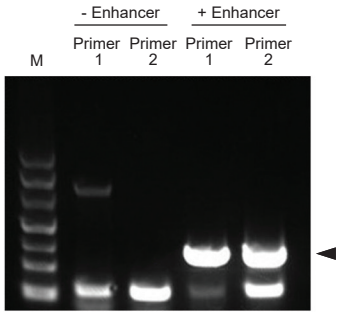
Reaction Program

Temperature	Time	Cycles
95°C	3 min (Initial Denaturation)[b]	
95°C	15 sec	30 - 35
60°C[c]	15 sec	
72°C	60 sec/kb	
72°C	5 min (Final Extension)	
4°C	Hold	

b. The condition of initial denaturation is applicable for most amplification reactions and can be modified according to the complexity of the template structure. If the template structure is complex, the initial denaturation time can be extended to 5 - 10 min to improve its effect.

c. The annealing temperature needs to be adjusted according to the Tm value of the primer, generally set to be 3 ~ 5°C lower than the Tm value of the primer; For complex templates, it is necessary to adjust the annealing temperature and extend the extension time to achieve efficient amplification.

Agarose Gel Electrophoresis Detection



Using the plasmid as a template and Primer 1/Primer 2 as primers, two fragments with a size of 690 bp and a GC content of 72% were respectively amplified. The results showed that only the experimental group with PCR Enhancer amplified the target fragment as shown by the arrow in the figure.

M: 100 bp DNA Ladder