Product information

Product Name: Universe Taq DNA Polymerase

Catalog No: VN2000E, VN2001E

Packing Size: 125 µl and 50 µl

Shipping Condition: Ice pack / dry ice

Storage Condition: -20^{0}C

Product Description:

Universe Taq DNA Polymerase is an advanced tool for efficient and easy PCR amplification, featuring a unique buffer system, high-performance Taq DNA polymerase, and cutting-edge hot-start technology. The innovative reaction buffer ensures universal annealing temperature by stabilizing primer-template duplex structures. Engineered for rapid cycling, superior specificity, and sensitivity, the Taq enzyme is highly resistant to common inhibitors and provides superior hot-start capabilities. This polymerase is compatible with both purified DNA and crude samples, making it ideal for a wide range of applications.

Protocol:

PCR setting for a 25 µl reaction

Reagent	Volume	Final Concentration
5X Reaction Buffer	5 µl	1x
dNTP Mix (10 mM)	0.5 µl	200 µM each
Left Primer	Variable	0.2 µM
Right Primer	Variable	0.2 µM
DNA template† / Blood / Plasma / Serum	Variable	0.1-100 ng / ≤ 5 µl
Universe Taq **	0.15-0.3 µl	
De-ionized Distilled H_2O	Adjust final volume to 25 µl	-

†DNA amount depends mostly on genome size and target gene copy number.
** The typical enzyme amount is 0.20 µl / 25 ul. To determine specific optimal enzyme concentration, we strongly recommend an enzyme titration test for each target. A good starting amount of enzyme per 25 µl reaction is 0.125 µl for purified DNA templates and 0.2 µl for crude samples containing 5% or more whole blood, plasma or serum. Targets larger than 1 kb may require more enzyme.

Typical Cycling Parameters

	Three-step		Two-step[1]	
Initial denaturation	95^{0}C	2 min (DNA) 5 min (crude samples)	95^{0}C	2 min (DNA) 5 min (crude samples)
25-40 cycles				
Denaturation	94^{0}C	15 to 20 sec	98^{0}C	5 sec
Annealing[2]	60^{0}C	15 to 20 sec	60^{0}C	20 sec
Extension	68^{0}C	15-30 sec / 1kb target		
Hold	4^{0}C			4^{0}C

[1]Recommend for simple amplicons less than 1 kb.
[2]60^{0}C annealing temperature works for most primer pairs. When annealing temperature requires additional optimization, we suggest to perform gradient PCR to find the best one.

Troubleshooting guide

No PCR products	Please check your PCR settings to ensure that all necessary components are included in the PCR mix. It's also recommended to perform a gradient annealing temperature experiment to determine the optimal temperature for your specific target. This can help to improve PCR efficiency and specificity, resulting in more reliable and consistent results.
The bands in agarose gel are smear	Enzyme titration for a particular target. It involves testing a range of enzyme concentrations to find the concentration that produces the most efficient and accurate results. It's important to note that using too much enzyme can actually inhibit the PCR reaction or overamplify the target, especially when working with short and simple target genes. Additionally, it's important to check for DNA and primer degradation as degraded DNA or primers can also negatively impact the PCR results.
Low yield of products	You can try the following strategies to improve PCR performance: • Conduct an enzyme titration experiment to optimize the enzyme concentration for your specific target. • Increase the extension time to ensure complete amplification of the target DNA. • Try a gradient annealing temperature experiment to identify the optimal annealing temperature for your primers. • Consider redesigning your primers if the amplification is not specific or efficient enough.
Non-specific products are observed	If you are observing non-specific products in your PCR reaction, there are several strategies you can try: • Perform a gradient annealing temperature experiment to identify the optimal temperature for your primers, which can help to reduce non-specific products. • Check the GC content of your target sequence. If it's above 65%, it may be necessary to use PCR enhancers. • Evaluate your primers and redesign them if necessary to improve specificity and reduce non-specific products.

Note: This product is for R&D use only

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