GB SYBR Green qPCR Mastermix 2x **For Research use only**

Cat No: GB2420

Size : 50 ml

GB SYBR Green qPCR Master Mix is a pre-formulated, optimized mixture designed for real-time PCR (qPCR) workflows. It combines several essential components to facilitate efficient and accurate DNA amplification and detection. Here are some key features:

Components

- **SYBR Green I Dye**: A fluorescent dye that binds to double-stranded DNA (dsDNA), allowing for real-time monitoring of the amplification process.
- **Taq DNA Polymerase**: using primer Block technology
- **dNTPs**: Deoxynucleotide triphosphates, the building blocks for DNA synthesis.
- **$MgCl_2$**: Magnesium chloride, a cofactor required for DNA polymerase activity.
- **UNG (Uracil-DNA Glycosylase)**: An enzyme that helps prevent carryover contamination by degrading any previously amplified PCR products.

Applications

- **Gene Expression Analysis**: Used to quantify gene expression levels in various samples.
- **Pathogen Detection**: Helps in identifying and quantifying pathogens in clinical and environmental samples.
- **Genotyping and Mutation Detection**: Used to identify genetic variations and mutations.
- **Screening Assays**: Ideal for target identification and screening applications.

Advantages

- **High Sensitivity**: SYBR Green dye provides high sensitivity for detecting low levels of dsDNA.
- **Cost-Effective**: No need for sequence-specific probes, making it a more economical option compared to probe-based systems.
- **Flexibility**: Compatible with a wide range of primers and templates.
- **Reproducibility**: Ensures consistent and reliable results across different platforms.

Composition of the 2× SYBR Green qPCR Mix :

100mM KCl , 5mM MgCl2, 400µM dNTPs, 0.1U/µl Hotstart Taq DNA Polymerase, 1× SYBR® Green I , UDG and other optimized buffer components.

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Preparation of reaction solution:

1. Add the following reagents to the proper thermal cycler reaction tube or plate on ice:

Component of sample	Volume	Final concentration
2x SYBR Green qPCR Mix	10 µl	1X
Forward Primer (10 µM)	0.4 µl	0.2 µM
Reverse Primer (10 µM)	0.4 µl	0.2 µM
Template DNA	variable	variable
Passive reference Dye(50X)	optional	Variable
Water, nuclease-free	to 20 µl	-

General protocol:

perform qPCR using the following cycling condition:

- UDG activation: 37C for 5minutes
- hold : 95°C for 5 minutes
- 40 cycles of:
  95°C, 15 seconds
  60°C, 30-60 second
  72C ,30S

Melting curve analysis: Refer to instrument documentation

Usage Tips

- **Optimal Primer Concentration**: Typically, primer concentrations should be in the range of 300-800 nM for optimal performance.
- **Prevention of Carryover Contamination**: The inclusion of UNG and dUTP helps degrade any previously amplified PCR products, reducing the risk of contamination.
- **Visual Indicators**: Some formulations include visual indicators to aid in reaction setup and prevent pipetting errors.

GB SYBR Green qPCR Master Mix is a versatile and reliable tool for real-time PCR applications, providing accurate and reproducible results

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