**SimpleChIP® Human β-Actin Promoter Primers**

**Applications**

- ChIP

**Species Cross-Reactivity**

- H (human)

**Primer Anneal/Extension**

- 65°C

**PCR Product Length**

- 148 bp

**Description:** SimpleChIP® Human β-Actin Promoter Primers contain a mix of forward and reverse PCR primers that are specific to a region of the human β-actin promoter. These primers can be used to amplify DNA that has been isolated using chromatin immunoprecipitation (ChIP). Primers have been optimized for use in SYBR® Green quantitative real-time PCR and have been tested in conjunction with SimpleChIP® Enzymatic Chromatin IP Kits #9002 and #9003 and ChIP-validated antibodies from Cell Signaling Technology®. The β-actin gene is actively transcribed in all cell types and its promoter is highly enriched for histone modifications associated with active transcription, such as histone H3 Lys4 tri-methylation and general histone acetylation. This gene promoter shows very low levels of histone modifications associated with heterochromatin, such as histone H3 Lys9 or Lys27 tri-methylation.

**Directions for Use:**

1. Label the appropriate number of PCR tubes or PCR plates compatible with the model of real-time PCR machine to be used. PCR reactions should be performed in duplicate and should include a tube with no DNA to control for contamination, and a serial dilution of a 2% total input chromatin DNA (undiluted, 1.5, 1:25, 1:125), which is used to create a standard curve and determine amplification efficiency.

2. Add 2 μl of the appropriate ChIP DNA sample to each tube or well of the PCR plate.

3. Prepare a master PCR reaction mix as described below. Add enough reagents for two extra reactions to account for loss of volume. Add 18 μl of the master PCR reaction mix to each PCR reaction tube or well of the PCR plate.

4. Start the following PCR reaction program:
   a. Initial Denaturation: 95°C for 3 min.
   b. Denaturation: 95°C for 15 sec.
   c. Anneal and Extension: Primer-specific temp. for 60 sec.
   d. Repeat steps b and c for a total of 40 cycles.

5. Analyze quantitative PCR results using software provided with the real-time PCR machine.

**Reagent Volume for 1 PCR Reaction (20 μl)**

- Nuclease-free H₂O 6 μl
- 5 μM SimpleChIP® Primers 2 μl
- 2X SYBR® Green Reaction Mix 10 μl

PCR product melting curves were obtained for real-time PCR reactions performed using SimpleChIP® Human β-Actin Promoter Primers. Data is shown for both duplicate PCR reactions using 20 ng of total DNA. The melt curve consists of 80 melt cycles, starting at 55°C with increments of 0.5°C per cycle. Each peak is formed from the degradation of a single PCR product.

**Storage:** Supplied in nuclease-free water at a concentration of 5 μM (each primer is at a final concentration of 5 μM). Store at -20°C.