

BETA 3 siRNA (m): sc-42067

BACKGROUND

Members of the myogenic determination family are basic helix-loop-helix (bHLH) proteins that can be separated into two classes. Class A proteins include the ubiquitously expressed E-box binding factors E12/E47, ITF2 and HEB (BETA 1 or HTF4). Class B proteins such as Myo D, myogenin and Neuro D (BETA 2) are transiently expressed and exhibit a more limited tissue distribution. Class A proteins heterodimerize with class B proteins to activate transcription. Working in opposition to these positively acting factors are a specialized group of proteins that function as dominant negative regulators. For instance, the Id family of transcriptional repressors contains a HLH region required for dimerization but lacks a functional DNA-binding domain. The Id family can therefore form heterodimers with the myogenic family, but the resulting complexes are transcriptionally inactive. BETA 3 is a protein that is functionally similar to members of the Id family in that it can inhibit the binding of E47 homodimers as well as E47/Neuro D and E47/Myo D heterodimers to consensus DNA sequences. In contrast to members of the Id family, BETA 3 contains a putative DNA-binding domain.

REFERENCES

1. Lee, J.E., et al. 1995. Conversion of *Xenopus* ectoderm into neurons by Neuro D, a basic helix-loop-helix protein. *Science* 268: 836-844.
2. Naya, F.J., et al. 1995. Tissue-specific regulation of the Insulin gene by a novel basic helix-loop-helix transcription factor. *Genes Dev.* 9: 1009-1019.
3. Vitola, S.J., et al. 1996. Substitution of basic amino acids in the basic region stabilizes DNA binding by E12 homodimers. *Nucleic Acids Res.* 24: 1921-1927.
4. Goldfarb, A.N., et al. 1996. Determinants of helix-loop-helix dimerization affinity. Random mutational analysis of SCL/tal. *J. Biol. Chem.* 271: 2683-2688.
5. Ishiguro, A., et al. 1996. Id2 expression increases the differentiation of human myeloid cells. *Blood* 87: 5225-5231.
6. Wibley, J., et al. 1996. A homology model of the Id-3 helix-loop-helix domain as a basis for structure-function predictions. *Biochim. Biophys. Acta* 1294: 138-146.
7. Peyton, M., et al. 1996. BETA 3, a novel helix-loop-helix protein, can act as a negative regulator of BETA 2 and MyoD-responsive genes. *Mol. Cell. Biol.* 16: 626-633.

CHROMOSOMAL LOCATION

Genetic locus: Bhlhe22 (mouse) mapping to 3 A1.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

BETA 3 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see BETA 3 shRNA Plasmid (m): sc-42067-SH and BETA 3 shRNA (m) Lentiviral Particles: sc-42067-V as alternate gene silencing products.

For independent verification of BETA 3 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42067A, sc-42067B and sc-42067C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

BETA 3 siRNA (m) is recommended for the inhibition of BETA 3 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor BETA 3 gene expression knockdown using RT-PCR Primer: BETA 3 (m)-PR: sc-42067-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.