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SANTA CRUZ BIOTECHNOLOGY, INC.

BMP-2 siRNA (h2): sc-270025

BACKGROUND

BMP-2 (bone morphogenetic protein 2), also known as BMP-2A (bone morphogenetic protein 2A), is a 396 amino acid secreted protein that belongs to the TGF-β family. As a disulfide-linked homodimer that induces cartilage and bone formation, BMP-2 interacts with SOSTDC1, gremlin-2, Asporin, RGMa, RGMb and RGMc. BMP-2 is highly expressed in lung, spleen and colon, with low levels of expression in heart, brain, placenta, liver, skeletal muscle, kidney, pancreas, prostate, ovary and small intestine. The gene that encodes BMP-2 maps to human chromosome 20p12.3. Comprising approximately 2% of the human genome, chromosome 20 contains nearly 63 million bases that encode over 600 genes, some of which are associated with Creutzfeldt-Jakob disease, amyotrophic lateral sclerosis, spinal muscular atrophy, ring chromosome 20 epilepsy syndrome and Alagille syndrome.

REFERENCES

1. Scheufler, C., et al. 1999. Crystal structure of human bone morphogenetic protein-2 at 2.7 A resolution. J. Mol. Biol. 287: 103-115.
2. Yanagita, M., et al. 2004. USAG-1: a bone morphogenetic protein antagonist abundantly expressed in the kidney. Biochem. Biophys. Res. Commun. 316: 490-500.
3. Heng, S., et al. 2010. Posttranslational activation of bone morphogenetic protein 2 is mediated by proprotein convertase 6 during decidualization for pregnancy establishment. Endocrinology 151: 3909-3917.
4. Kim, H.N., et al. 2011. Combination of Runx2 and BMP2 increases conversion of human ligamentum flavum cells into osteoblastic cells. BMB Rep. 44: 446-451.
5. Liberman, M., et al. 2011. Bone morphogenetic protein-2 activates NADPH oxidase to increase endoplasmic reticulum stress and human coronary artery smooth muscle cell calcification. Biochem. Biophys. Res. Commun. 413: 436-441.
6. Liu, S., et al. 2011. The additive effect of mesenchymal stem cells and bone morphogenetic protein 2 on γ-irradiated bone marrow in mice. Cell Biochem. Biophys. 61: 539-550.

CHROMOSOMAL LOCATION

Genetic locus: BMP2 (human) mapping to 20p12.3.

PRODUCT

BMP-2 siRNA (h2) 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see BMP-2 shRNA Plasmid (h2): sc-270025-SH and BMP-2 shRNA (h2) Lentiviral Particles: sc-270025-V as alternate gene silencing products.

For independent verification of BMP-2 (h2) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270025A, sc-270025B and sc-270025C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

BMP-2 siRNA (h2) is recommended for the inhibition of BMP-2 expression in human 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 µM in 66 µl. 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.

GENE EXPRESSION MONITORING

BMP-2/4 (H-1): sc-137087 is recommended as a control antibody for monitoring of BMP-2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor BMP-2 gene expression knockdown using RT-PCR Primer: BMP-2 (h2)-PR: sc-270025-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

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.