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SANTA CRUZ BIOTECHNOLOGY, INC.

MMP-13 siRNA (h): sc-41559

BACKGROUND

The matrix metalloproteinases (MMP) are a family of peptidase enzymes responsible for the degradation of extracellular matrix components, including collagen, gelatin, Fibronectin, Laminin and proteoglycan. Transcription of MMP genes is differentially activated by phorbol ester, lipopolysaccharide (LPS) or staphylococcal enterotoxin B (SEB). MMP catalysis requires both calcium and zinc. MMP-13 (also designated collagenase-3) is produced by breast carcinomas and degrades collagen types I, II and III. MMP-13 has wide substrate specificity, and its physiologic expression is limited to situations in which rapid and effective remodeling of collagenous ECM takes place, such as fetal bone development and adult bone remodeling.

CHROMOSOMAL LOCATION

Genetic locus: MMP13 (human) mapping to 11q22.2.

PRODUCT

MMP-13 siRNA (h) 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 MMP-13 shRNA Plasmid (h): sc-41559-SH and MMP-13 shRNA (h) Lentiviral Particles: sc-41559-V as alternate gene silencing products.

For independent verification of MMP-13 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-41559A, sc-41559B and sc-41559C.

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

MMP-13 siRNA (h) is recommended for the inhibition of MMP-13 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

MMP-13 (C-3): sc-515284 is recommended as a control antibody for monitoring of MMP-13 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 MMP-13 gene expression knockdown using RT-PCR Primer: MMP-13 (h)-PR: sc-41559-PR (20 µl, 589 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tan, T.W., et al. 2009. Cyr61 increases migration and MMP-13 expression via $\alpha_v\beta_3$ integrin, FAK, ERK and AP-1-dependent pathway in human chondrosarcoma cells. Carcinogenesis 30: 258-268.
2. Hou, C.H., et al. 2009. Bone morphogenetic protein-2 enhances the motility of chondrosarcoma cells via activation of matrix metalloproteinase-13. Bone 44: 233-242.
3. Tan, T.W., et al. 2009. CTGF enhances migration and MMP-13 up-regulation via $\alpha_v\beta_3$ integrin, FAK, ERK, and NFκB-dependent pathway in human chondrosarcoma cells. J. Cell. Biochem. 107: 345-356.
4. Tang, C.H., et al. 2011. IL-6 increases MMP-13 expression and motility in human chondrosarcoma cells. J. Biol. Chem. 286: 11056-11066.
5. Ozeki, N., et al. 2016. Wnt16 signaling is required for IL-1β-induced matrix metalloproteinase-13-regulated proliferation of human stem cell-derived osteoblastic cells. Int. J. Mol. Sci. 17: 221.
6. Ozeki, N., et al. 2016. Bone morphogenetic protein-induced cell differentiation involves ATG7 and Wnt16 sequentially in human stem cell-derived osteoblastic cells. Exp. Cell Res. 347: 24-41.
7. Yan, H.Q., et al. 2016. Ataxia-telangiectasia mutated activation mediates tumor necrosis factor-α induced MMP-13 up-regulation and metastasis in lung cancer cells. Oncotarget 7: 62070-62083.
8. Chan, C.Y., et al. 2019. Matrix metalloproteinase-13 is a target gene of high-mobility group box-containing protein 1 in modulating oral cancer cell invasion. J. Cell. Physiol. 234: 4375-4384.

RESEARCH USE

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