

MMP-3 siRNA (h): sc-29399

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-3, MMP-10 and MMP-11 (also designated stromelysin-1, -2 and -3 respectively) activate procollagenase. MMP-3 activation of procollagenase can occur via two pathways. Direct activation by MMP-3 is slow and activation by MMP-3 in conjunction with tissue or plasma proteinases is rapid. MMP-10 is expressed in small intestine, and at lower levels in lung and heart. MMP-11 is specifically expressed in stromal cells of breast carcinomas and contributes to epithelial cell malignancies.

CHROMOSOMAL LOCATION

Genetic locus: MMP3 (human) mapping to 11q22.2.

PRODUCT

MMP-3 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MMP-3 shRNA Plasmid (h): sc-29399-SH and MMP-3 shRNA (h) Lentiviral Particles: sc-29399-V as alternate gene silencing products.

For independent verification of MMP-3 (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-29399A, sc-29399B and sc-29399C.

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

MMP-3 siRNA (h) is recommended for the inhibition of MMP-3 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 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.

GENE EXPRESSION MONITORING

MMP-3 (1B4): sc-21732 is recommended as a control antibody for monitoring of MMP-3 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MMP-3 gene expression knockdown using RT-PCR Primer: MMP-3 (h)-PR: sc-29399-PR (20 μ l, 495 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tang, C.H., et al. 2010. Involvement of matrix metalloproteinase-3 in CCL5/CCR5 pathway of chondrosarcomas metastasis. *Biochem. Pharmacol.* 79: 209-217.
2. Chen, H.T., et al. 2010. Thrombin enhanced migration and MMPs expression of human chondrosarcoma cells involves PAR receptor signaling pathway. *J. Cell. Physiol.* 223: 737-745.
3. Chuang, J.Y., et al. 2012. Cyr61 increases matrix metalloproteinase-3 expression and cell motility in human oral squamous cell carcinoma cells. *J. Cell. Biochem.* 113: 1977-1986.
4. Liu, M., et al. 2013. STAT3 regulates MMP3 in heme-induced endothelial cell apoptosis. *PLoS ONE* 8: e71366.
5. Ozeki, N., et al. 2014. IL-1 β -induced matrix metalloproteinase-13 is activated by a disintegrin and metalloprotease-28-regulated proliferation of human osteoblast-like cells. *Exp. Cell Res.* 323: 165-177.
6. 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.
7. Ozeki, N., et al. 2017. Gelatin scaffold combined with bone morphogenetic protein-4 induces odontoblast-like cell differentiation involving integrin profile changes, autophagy-related gene 10, and Wnt5 sequentially in human induced pluripotent stem cells. *Differentiation* 93: 1-14.
8. Liao, C.W., et al. 2020. Interleukin-6 plays a critical role in aldosterone-induced macrophage recruitment and infiltration in the myocardium. *Biochim. Biophys. Acta Mol. Basis Dis.* 1866: 165627.
9. Yu, X., et al. 2021. GBP5 drives malignancy of glioblastoma via the Src/ERK1/2/MMP3 pathway. *Cell Death Dis.* 12: 203.

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.