SANTA CRUZ BIOTECHNOLOGY, INC.

MMP-9 siRNA (m): sc-29401

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-9 (also designated 92 kDa type IV collagenase or gelatinase B) has been shown to degrade bone collagens in concert with MMP-1 (also designated interstitial collagenase, fibroblast collagenase or collagenase-1), and cysteine proteases and may play a role in bone osteoclastic resorption. MMP-1 is downregulated by p53, and abnormality of p53 expression may contribute to joint degradation in rheumatoid arthritis by regulating MMP-1 expression.

REFERENCES

1. Templeton, N.S., et al. 1990. Cloning and characterization of human tumor cell interstitial collagenase. Cancer Res. 50: 5431-5437.
2. Birkedal-Hansen, H., et al. 1993. Matrix metalloproteinases: a review. Crit. Rev. Oral Biol. Med. 4: 197-250.
3. Reinemer, P., et al. 1994. Structural implications for the role of the N terminus in the "superactivation" of collagenases. A crystallographic study. FEBS Lett. 338: 227-233.

CHROMOSOMAL LOCATION

Genetic locus: Mmp9 (mouse) mapping to 2 H3.

PRODUCT

MMP-9 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MMP-9 shRNA Plasmid (m): sc-29401-SH and MMP-9 shRNA (m) Lentiviral Particles: sc-29401-V as alternate gene silencing products.

For independent verification of MMP-9 (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-29401A, sc-29401B and sc-29401C.

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-9 siRNA (m) is recommended for the inhibition of MMP-9 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 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-9 (E-11): sc-393859 is recommended as a control antibody for monitoring of MMP-9 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-9 gene expression knockdown using RT-PCR Primer: MMP-9 (m)-PR: sc-29401-PR (20 µl, 609 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.K., et al. 2010. Macrophage matrix metalloproteinase-9 mediates epithelial-mesenchymal transition *in vitro* in murine renal tubular cells. Am. J. Pathol. 176: 1256-1270.
2. Abdulkhalek, S., et al. 2011. Neu1 sialidase and matrix metalloproteinase-9 cross-talk is essential for Toll-like receptor activation and cellular signaling. J. Biol. Chem. 286: 36532-36549.
3. Song, S.A., et al. 2012. Over-expression of Mxi1 represses renal epithelial tubulogenesis through the reduction of matrix metalloproteinase 9. Biochem. Biophys. Res. Commun. 419: 459-465.
4. Abdulkhalek, S., et al. 2012. G protein-coupled receptor agonists mediate Neu1 sialidase and matrix metalloproteinase-9 cross-talk to induce transactivation of Toll-like receptors and cellular signaling. Cell. Signal. 24: 2035-2042.
5. Xu, L., et al. 2017. Activation-induced upregulation of MMP-9 in mast cells is a positive feedback mediator for mast cell activation. Mol. Med. Rep. 15: 1759-1764.
6. Sun, E.G., et al. 2023. Suppression of triple-negative breast cancer aggressiveness by LGALS3BP via inhibition of the TNF-α-TAK1-MMP-9 axis. Cell Death Discov. 9: 122.
7. Chellini, F., et al. 2023. HIF-1α/MMP-9 axis is required in the early phases of skeletal myoblast differentiation under normoxia condition *in vitro.* Cells 12: 2851.

RESEARCH USE

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