

# MMP-1 siRNA (h): sc-41552

## 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 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.

## CHROMOSOMAL LOCATION

Genetic locus: MMP1 (human) mapping to 11q22.2.

## PRODUCT

MMP-1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MMP-1 shRNA Plasmid (h): sc-41552-SH and MMP-1 shRNA (h) Lentiviral Particles: sc-41552-V as alternate gene silencing products.

For independent verification of MMP-1 (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-41552A, sc-41552B and sc-41552C.

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

## APPLICATIONS

MMP-1 siRNA (h) is recommended for the inhibition of MMP-1 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  $\mu$ M in 66  $\mu$ 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-1 (3B6): sc-21731 is recommended as a control antibody for monitoring of MMP-1 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-1 gene expression knockdown using RT-PCR Primer: MMP-1 (h)-PR: sc-41552-PR (20  $\mu$ l, 409 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

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2. Akakura, S., et al. 2010. Rb-dependent cellular senescence, multinucleation and susceptibility to oncogenic transformation through PKC scaffolding by SSeCKS/AKAP12. *Cell Cycle* 9: 4656-4665.
3. Lin, C.Y., et al. 2013. Apoptosis signal-regulating kinase 1 is involved in brain-derived neurotrophic factor (BDNF)-enhanced cell motility and matrix metalloproteinase 1 expression in human chondrosarcoma cells. *Int. J. Mol. Sci.* 14: 15459-15478.
4. Wu, Y., et al. 2014. Interleukin-17A stimulates migration of periodontal ligament fibroblasts via p38 MAPK/NF $\kappa$ B -dependent MMP-1 expression. *J. Cell. Physiol.* 229: 292-299.
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6. Wang, Y., et al. 2018. MicroRNA hsa-let-7b suppresses the odontogenic differentiation capacity of stem cells from apical papilla by targeting MMP1. *J. Cell. Biochem.* 119: 6545-6554.
7. Schelch, K., et al. 2018. FGF2 and EGF induce epithelial-mesenchymal transition in malignant pleural mesothelioma cells via a MAP kinase/MMP1 signal. *Carcinogenesis* 39: 534-545.
8. Zanutto-Filho, A., et al. 2018. Sorafenib improves alkylating therapy by blocking induced inflammation, invasion and angiogenesis in breast cancer cells. *Cancer Lett.* 425: 101-115.
9. Lee, K.E., et al. 2018. German cockroach extract induces matrix metalloproteinase-1 expression, leading to tight junction disruption in human airway epithelial cells. *Yonsei Med. J.* 59: 1222-1231.
10. Liao, C.W., et al. 2019. Interleukin-6 plays a critical role in aldosterone-induced macrophage recruitment and infiltration in the myocardium. *Biochim. Biophys. Acta Mol. Basis Dis.* 1866: 165627.

## RESEARCH USE

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