Recombinant Human MMP-1 (carrier-free)

Catalog# / Size	592908 / 500 µg 592902 / 10 µg 592904 / 25 µg
Regulatory Status	RUO
Other Names	Interstitial collagenase, Fibroblast collagenase, MMP1, MMP
Description	MMP-1 is a member of matrix metalloproteinase family proteins (MMPs); members of this family are structurally related, zinc-containing enzymes that degrade the extracellular matrix (ECM) and connective tissue proteins. MMP-1 consists of a prodomain which is cleaved upon activation: a catalytic domain containing the zinc binding site, a short hinge region, and a carboxyl terminal (hemopexin-like repeats) domain. Substrates of MMP-1 include collagen I, II, III, VII, VIII, and X as well as casein, gelatin, alpha1 antitrypsin, myelin basic protein, L Selectin, pro-TNF, IL-1β, IGFBP3, IGFBP5, pro-MMP-2, and pro-MMP-9. In addition, chemokines are substrates for MMP-1. CCL2, CCL7, CCL8, and CCL13 are catalytically cleavage by MMP-1 to produce receptor antagonists. CXCL5 and CXCL12 are also substrates for MMP-1. TIMPs inhibit MMPs in a 1:1 inhibitor to enzyme ratio through interaction of the N-terminal domain of the TIMP molecule with the active site of the MMP. MMPs are involved in the breakdown of ECM in normal physiological processes, such as embryonic development, reproduction, and tissue remodeling as well as in disease processes such as arthritis and metastasis. MMP-1 is overexpressed in invasive melanoma, colorectal, and esophageal cancers. Importantly, MMP-1 expression was shown to increase progressively with tumor stage.

Product Details

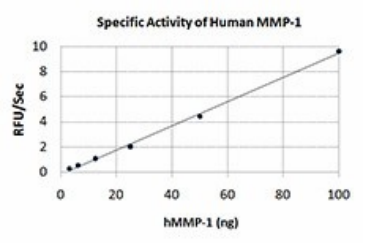
Source	Human MMP-1, amino acids (Phe20-Asn469) (Accession# NP_002412.1), is expressed with N-terminal His9-SGGGSGGGIEGR tag in 293E cell line.
Molecular Mass	Predicted molecular mass of approximately 54 kD. The protein migrates at about 55 kD in DTT-reducing conditions and about 60 kD in non-reducing condition by SDS-PAGE.The N-terminal amino acid is Histidine.
Formulation	0.22 µm filtered protein solution is in TCN (25 mM TRIS, 10 mM CaCl2, 150 mM NaCl, pH 7.5).
Endotoxin Level	Less than 1.0 EU per µg of protein as determine by the LAL method
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg size and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored at -20°C or -70°C for six months. For maximum results, quick spin vial prior to opening. **Avoid repeated freeze/thaw cycles.**
Activity	Human MMP-1 cleaves the peptide substrate Mca-KPLGL-Dpa-AR-NH2 with an activity above 200 pmol/min/µg.
Application	Bioassay
Application Notes	This protein is in the latent form and needs to be activated for bioassay. BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our 100% satisfaction guarantee. If you have any concerns, contact us at tech@biolegend.com.

Antigen Details

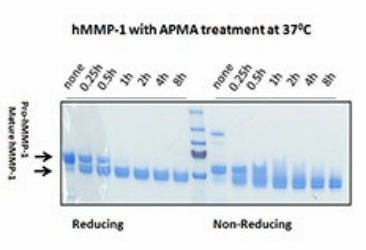
Structure	Monomer

Distribution	MMP-1 is expressed by fibroblasts, keratinocytes, endothelial cells, monocytes, and macrophages.
Function	Degradation of ECM and connective tissue proteins. Angiogenesis, tissue remodeling, cancer metastasis. MMP-1 regulates chemokine activity. MMP1 is inhibited by TIMPs, α2-macroglobulin (inhibitor of MMPs in bodily fluids). TNFα downregulates TIMPs and enhances the expression of MMPs.
Interaction	Extracellular matrix proteins
Ligand/Receptor	TIMPs
Bioactivity	hMMP-1 cleaves a peptide substrate Mca-KPLGL-Dpa-AR-NH2
Biology Area	Angiogenesis, Cell Adhesion, Cell Biology, Neuroinflammation, Neuroscience, Stem Cells
Molecular Family	Enzymes and Regulators
Antigen References	1. Nagase H and Woessner JF Jr. 1999. *J. Biol. Chem.* 274:21491. 2. Kader AK, *et al.* 2007. *Clin. Cancer Res.* 13:2614. 3. Gill SE and Parks WC. 2008. *Int. J. Biochem. Cell Biol.* 40:1334. 4. Mazor R, *et al.* 2013. *J. Biol. Chem.* 288:598. 5. Sommer K, *et al.* 2013. *PLos One* 8:e73992.
Gene ID	4312

Product Data



The activity of human MMP-1 was measured with 10 µM of fluorogenic MMP substrate, Mca-KPLGLDpa-AR, in the presence of 3.125, 6.25, 12.5, 25, 50, 100 ng of activated human MMP-1.



Human MMP-1 (~54 kD) was activated by1 mM of p-Aminophenylmercuric acetate (APMA) at different time points at 37°C. After 1 h of activation, the mature form hMMP-1 (~45 kD) could be readily observed. Samples at reducing and non-reducing condition were resolved in a SDS-PAGE. Molecular weight markers at 250, 150, 100, 70, 55 kD were labeled here. *Protein per lane: 2.5 µg*

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