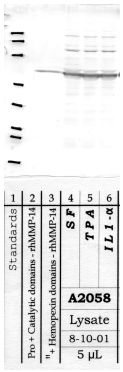
Anti-MMP14 Rabbit Polyclonal Antibody

Matrix metalloproteinase-14, MMP-14, EC 3.4.24.80, MMP-X1, Membrane-type matrix metalloproteinase 1, MT-MMP 1, MTMMP1, Membrane-type-1 matrix metalloproteinase, MT1-MMP, MT1MMP,

Gene: MMP14 **UniProt:** P50281 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



Â Aminoterminal end of active enzyme
RP5MMP14

— Western Blot (1-panel validation)

Actual Western blot validation for anti-MMP14 rabbit polyclonal antibody. 1-panel validation across domain-specific antibody clones — each panel labeled with its catalog number and target domain. Reducing conditions; 10–20 µg/lane on 7.5–10% SDS-PAGE.

Key Product Facts

Supplier	Triple Point Biologics, Inc. (Sudbury, Ontario, Canada)
Product Name	Anti-MMP14 Rabbit Polyclonal Antibody
Gene Symbol	MMP14
Alternative Names	Matrix metalloproteinase-14, MMP-14, EC 3.4.24.80, MMP-X1, Membrane-type matrix metalloproteinase 1, MT-MMP 1, MTMMP1, Membrane-type-1 matrix metalloproteinase, MT1-MMP, MT1MMP,
UniProt ID	P50281
Host Species	Rabbit
Clonality	Polyclonal (pAb)
Isotype	IgG
Concentration	1mg/ml
Purity	Affinity purified
Pack Size	100ug
Validated Application	WB
Recommended Dilution	WB-1/1000
Species Reactivity	Validated- Human Potential-Mouse, Rat, Pan, Monkey, Dog, Pig
Immunogen Type	Synthetic Peptide from Uniprot Sequence
Conjugation	none
Buffer / Preservatives	Sodium Chloride 500 mM, Sodium Phosphate 10 mM, Potassium Phosphate 1.8 mM, Potassium Chloride 2.7 mM, Glycerol 50% (v/v)
Website	triplepointbiologics.com/anti-mmp-14-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of MMP14. Each variant is directed at a specific structural region of the protein. Exact peptide sequences are proprietary; each variant is validated for the applications listed.

Domain / Variant	Epitope Region (approx. residues)	Cat. No.	Availability

Hinge Region	**284–316** Region within the proline-rich hinge (linker) segment of human MMP-14, situated between the C-terminal boundary of the catalytic domain and the N-terminal boundary of the hemopexin-like (PEX) domain; this flexible linker is part of the extracellular ectodomain and is accessible on the outer leaflet of the plasma membrane	RP1MMP14	In catalog
Cytoplasmic domain	**~563–582** Region within the short C-terminal cytoplasmic tail of human MMP-14, located intracellularly downstream of the single-pass transmembrane helix; this segment contains palmitoylation sites and endocytic sorting signals that regulate receptor trafficking and surface availability	RP2MMP14	In catalog
Carboxyterminal end Propeptide domain	**91–111** Region at or near the C-terminal end of the MMP-14 prodomain, immediately upstream of the catalytic domain; this segment flanks the furin cleavage site (RRKR motif) at which proprotein convertases act to release the prodomain and generate the mature active enzyme	RP3MMP14	In catalog
Propeptide region	**21–111** Region spanning the bulk of the MMP-14 prodomain, which contains the cysteine-switch motif (PRCGVPD) responsible for maintaining latency by coordinating the catalytic zinc ion; removal of this domain by furin-type convertases is required for enzymatic activation	RP4MMP14	In catalog
Â Aminoterminal end of active enzyme	**~112–160** Region at the N-terminal portion of the MMP-14 catalytic domain, immediately downstream of the furin cleavage site; this segment forms part of the N-terminal helix of the mature active enzyme and contributes to the structural integrity of the catalytic cleft containing the zinc-binding HEXXHXXGXXH motif	RP5MMP14	In catalog
—	**112–582** Broad region spanning multiple extracellular domains of human MMP-14, encompassing the prodomain, catalytic domain, hinge/linker region, and hemopexin-like domain; antibodies raised against this multi-domain region are suitable for detecting both pro- and active forms of the enzyme across a range of assay formats	RP-MMP14	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated-Human Potential-Mouse, Rat, Pan, Monkey, Dog, Pig	1:1000	Optimal dilution should be determined per laboratory and lot.

Optimal dilutions should be determined by each laboratory for each application. Triple Point Biologics antibodies include a peptide-neutralized negative control aliquot for specific-signal confirmation.

Storage & Handling

Short-term Storage	+4°C (1–2 weeks)
Long-term Storage	Aliquot and store at -20°C
Shipping Conditions	Shipped in styrofoam cooler on blue ice
Hazard Warning	Product may contain Sodium Azide — POISONOUS AND HAZARDOUS. Handle by trained personnel only.
Shelf Life	12 months from date of receipt under recommended conditions

Target Background

General Biology & Family

Matrix metalloproteinase-14 (MMP-14, MT1-MMP) is a type I transmembrane zinc-dependent endopeptidase belonging to the metzincin superfamily and the MMP family. Unlike the majority of MMPs, which are secreted, MMP-14 is anchored to the plasma membrane via a C-terminal transmembrane domain and short cytoplasmic tail, positioning its catalytic ectodomain at the cell surface for pericellular proteolysis. The mature protein is 582 amino acids and carries the conserved HEXXHXXGXXH zinc-binding motif. MMP-14 is the founding member of the membrane-type MMP (MT-MMP) sub-class and remains the most extensively studied of the six MT-MMPs.

Expression & Localisation

MMP-14 is broadly expressed in mesenchymal, stromal, and vascular cell types, including fibroblasts, osteoblasts, chondrocytes, endothelial cells, and macrophages. Expression is low in most resting adult tissues but is markedly induced during embryonic morphogenesis, wound healing, and inflammatory responses. At the subcellular level, MMP-14 concentrates at invadopodia and lamellipodia — actin-rich membrane protrusions used by invasive cells — where it drives focalized ECM degradation. Trafficking between the plasma membrane and intracellular endosomal compartments modulates its surface availability and, consequently, its proteolytic output.

Domain Architecture & Activation Mechanism

The MMP-14 ectodomain comprises a signal peptide, a prodomain harboring the cysteine-switch motif, a catalytic domain, a proline-rich hinge (linker) region, and a hemopexin-like (PEX) domain, followed by the transmembrane helix and cytoplasmic tail. The prodomain is removed intracellularly by furin-type proprotein convertases acting on a paired basic residue motif (RRKR), yielding the active enzyme before or coincident with delivery to the cell surface. This constitutive intracellular

activation distinguishes MMP-14 from most secreted MMPs, which require extracellular activation.

Key Substrates & Proteolytic Cascades

MMP-14 cleaves fibrillar collagens (types I, II, and III), gelatin, fibronectin, laminin, vitronectin, and several proteoglycans, enabling cells to breach basement membranes and remodel stromal architecture. Critically, its hemopexin domain forms a ternary complex with TIMP-2 and pro-MMP-2 at the cell surface, positioning pro-MMP-2 for trans-activation by adjacent MMP-14 molecules — a mechanism that amplifies pericellular proteolysis. Beyond structural matrix components, MMP-14 processes signaling receptors including PTK7 (affecting actin dynamics), DLL1 (modulating Notch signaling), ADGRB1/BAI1 (releasing angiostatic vasculostatin-40), and GFRAL (attenuating the GDF15-driven aversive energy-balance response).

Inhibitor Profile

Like other MMPs, MMP-14 is inhibited by tissue inhibitors of metalloproteinases (TIMPs). TIMP-2, TIMP-3, and TIMP-4 inhibit MMP-14 activity, whereas TIMP-1 shows markedly reduced affinity and is a poor inhibitor of MT-MMPs. The interaction of TIMP-2 with the hemopexin domain of MMP-14 is mechanistically dual: at low TIMP-2 concentrations it facilitates pro-MMP-2 activation, while at high concentrations it blocks MMP-14 catalytic activity. Synthetic hydroxamate inhibitors and broad-spectrum MMP inhibitors (e.g., GM6001) also suppress MMP-14 activity in experimental settings, though selectivity across the MMP family remains a pharmacological challenge.

Disease Relevance

MMP-14 is frequently overexpressed in carcinomas of the breast, lung, colon, and head-and-neck, where elevated levels correlate with invasive phenotype, lymph node metastasis, and poor prognosis. Homozygous loss-of-function mutations in humans cause Winchester syndrome and nodulosis-arthropathy-osteolysis syndrome, manifesting as skeletal dysplasia and connective tissue accumulation, underscoring its non-redundant role in developmental tissue remodeling. MMP-14 also contributes to fibrotic disorders, atherosclerotic plaque remodeling, and inflammatory arthritis. Its restricted surface expression and broad substrate repertoire make it a longstanding target of interest for therapeutic inhibition and diagnostic imaging in oncology.

Gene & Protein Reference

Gene Symbol	MMP14
HGNC	7160
NCBI Gene ID (Human)	4323
NCBI Gene ID (Mouse)	17387
Ensembl	ENSG00000196805
OMIM	600754
UniProt (Human)	P50281
UniProt (Mouse)	P51gustav — Q9R0Q3
Protein Family	Peptidase M10A (matrix metalloproteinase) family; membrane-type MMP (MT-MMP) sub-class
Predicted MW	65.9 kDa (full-length precursor); ~57 kDa (active ectodomain after prodomain removal)

Observed MW	~63–66 kDa (zymogen); ~55–60 kDa (active form) on SDS-PAGE; additional bands may reflect glycosylation heterogeneity
Chromosome	14q11.2
Paralogue	MMP15 (MT2-MMP), MMP16 (MT3-MMP), MMP17 (MT4-MMP), MMP24 (MT5-MMP), MMP25 (MT6-MMP)
Key Substrates	Pro-MMP-2, fibrillar collagens I/II/III, fibronectin, laminin, vitronectin, aggrecan, PTK7, DLL1, ADGRB1/BAI1, GFRAL, CD44
Activated by	Furin and furin-like proprotein convertases (intracellular, RRKR site); trans-activation by adjacent MMP-14 molecules at cell surface
Inhibited by	TIMP-2 (dual role: pro-MMP-2 recruitment at low concentrations; inhibition at high concentrations), TIMP-3, TIMP-4; broad-spectrum hydroxamate inhibitors (e.g., GM6001, marimastat); TIMP-1 is a poor inhibitor

About Triple Point Biologics

With over 30 years dedicated to antibody production, Triple Point Biologics is a Canadian company and the premier resource for proteinase and proteinase inhibitor research. Products have been cited in thousands of peer-reviewed publications.

The domain-specific antibody strategy — available in standard, ATK, SPA, and GSK kit formats — delivers predefined epitopes, built-in peptide-neutralized negative controls, and superior specificity for Western blot.

Website: www.triplepointbiologics.com