Anti-CMA1 Rabbit Polyclonal Antibody

Chymase, EC 3.4.21.39, Alpha-chymase, Mast cell protease I,

Gene: CMA1 **UniProt:** P23946 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image

Image placeholder — Western Blot

— Western Blot

Suggested image: Western blot of relevant cell or tissue lysates under reducing conditions, probed with the domain-specific antibody. Include a positive-control lane and empty-vector or knockout negative control. Loading: 10–20 µg/lane on 7.5–10% SDS-PAGE.

Key Product Facts

Supplier	Triple Point Biologics, Inc. (Sudbury, Ontario, Canada)
Product Name	Anti-CMA1 Rabbit Polyclonal Antibody
Gene Symbol	CMA1
Alternative Names	Chymase, EC 3.4.21.39, Alpha-chymase, Mast cell protease I,
UniProt ID	P23946
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-
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-chymase-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CMA1. 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

Catalytic domain	**22–247** Region spanning the principal catalytic domain of mature human chymase (CMA1), encompassing the chymotrypsin-like fold and the His57–Asp102–Ser195 catalytic triad (chymotrypsinogen numbering); this domain constitutes the majority of the processed, active enzyme and is the primary structural determinant of substrate specificity	RP2Chymase	In catalog
Carboxyterminal end	**197–247** Region encompassing the C-terminal segment of mature human chymase, downstream of the catalytic triad residues and proximal to the C-terminus of the processed 247-residue protein; this region contributes to the structural integrity of the chymotrypsin fold and lies outside the primary substrate-binding cleft	RP3Chymase	In catalog
—	**22–247** Broad-coverage region spanning the full length of the mature human chymase protein from the processed N-terminus through the C-terminal residue, encompassing both the catalytic domain and flanking structural elements; suitable for detection of multiple epitopes across the complete mature enzyme	RP-Chymase	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated-Human Potential-	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

Family & General Biology

Chymase (CMA1; EC 3.4.21.39) is a chymotrypsin-like serine protease belonging to the peptidase S1 family (clan PA). It is the predominant secreted protease of human mast cells and is distinguished from other mast cell tryptases by its chymotryptic cleavage preference at aromatic and large hydrophobic residues. The mature 247-residue enzyme shares the canonical His-Asp-Ser catalytic triad characteristic of the chymotrypsin fold. CMA1 is encoded on chromosome 14q11.2 within a cluster of immune serine protease genes, reflecting its evolutionary relationship to other granulocyte-associated proteases.

Expression & Localisation

CMA1 expression is highly restricted to mast cells, particularly the connective tissue mast cell (MCTC) subtype, which co-express both chymase and tryptase. Within the mast cell, chymase is stored in electron-dense secretory granules in an enzymatically active but granule-bound form, where it is stabilised by association with heparin and chondroitin sulfate proteoglycans. CMA1 transcript and protein are detected at high levels in skin, heart, intestinal wall, and uterus — tissues enriched in connective tissue mast cells — and are largely absent from mucosal mast cells (MCT subtype) that express tryptase alone.

Activation Mechanism

CMA1 is synthesised as a zymogen carrying a short N-terminal propeptide. Intragranular activation is mediated by dipeptidyl peptidase I (cathepsin C), which removes the propeptide in a manner analogous to the processing of other granule-resident serine proteases such as granzymes and mast cell tryptases. Once processed, chymase remains catalytically competent within the acidic granule environment, stabilised by ionic interactions with negatively charged proteoglycans. Upon mast cell degranulation, the enzyme is released into the extracellular space, where it retains activity over a neutral-to-slightly-alkaline pH range.

Key Substrates & Proteolytic Specificity

The most extensively characterised substrate of CMA1 is angiotensin I, which chymase converts to angiotensin II by cleaving the Phe8–His9 bond — an ACE-independent pathway that is quantitatively dominant in human cardiac and vascular tissue. Additional substrates include big endothelin-1 (generating ET-1[1–31]), substance P, vasoactive intestinal peptide, and stem cell factor. Chymase also degrades extracellular matrix components, including fibronectin, vitronectin, and type IV collagen, and activates latent TGF-β1, implicating it directly in tissue remodelling and fibrogenic signalling cascades.

Inhibitor Profile

Endogenous inhibition of chymase is effected primarily by serine protease inhibitors (serpins). Alpha-1-antichymotrypsin (SERPINA3) is the principal physiological inhibitor in plasma and interstitial fluid. Secretory leukocyte protease inhibitor (SLPI) and alpha-2-macroglobulin also contribute to extracellular regulation. Within the granule, proteoglycan association functions as a non-covalent, reversible form of activity modulation rather than strict inhibition. Small-molecule chymase inhibitors have been developed as research tools and therapeutic candidates, including compounds based on benzamide and pyrimidinone scaffolds, enabling mechanistic dissection of chymase-specific substrate processing in cell and animal models.

Disease Relevance

Elevated chymase activity has been documented in cardiac interstitial fluid and endomyocardial biopsy samples from patients with heart failure and atrial fibrillation, consistent with its role in local angiotensin II generation and pro-fibrotic TGF-β activation independent of the systemic renin–angiotensin–aldosterone axis. Chymase is also implicated in pulmonary fibrosis, inflammatory bowel disease, and chronic allergic conditions, where mast cell degranulation drives extracellular matrix remodelling and neuropeptide processing. As a near-exclusive marker of the MCTC mast cell subtype, CMA1 immunoreactivity is used diagnostically to enumerate and phenotype tissue mast cells in biopsy specimens.

Gene & Protein Reference

Gene Symbol	CMA1
HGNC	HGNC:2007
NCBI Gene ID (Human)	1215
NCBI Gene ID (Mouse)	109660
Ensembl	ENSG00000092009
OMIM	118938
UniProt (Human)	P23946
UniProt (Mouse)	P21844
Protein Family	Peptidase S1 family (clan PA), chymotrypsin subfamily; mast cell serine protease
Predicted MW	28.8 kDa (mature form, propeptide removed)
Observed MW	30–35 kDa (SDS-PAGE; variable with glycosylation state)
Chromosome	14q11.2
Paralogue	MCPT5 (mouse mast cell protease 5); GZMB (granzyme B) — distant paralogue within peptidase S1 family
Key Substrates	Angiotensin I → Angiotensin II; Big endothelin-1 → ET-1[1–31]; Stem cell factor; Fibronectin; Type IV collagen; Substance P; Vasoactive intestinal peptide; Latent TGF-β1
Activated by	Dipeptidyl peptidase I (cathepsin C) — propeptide removal; acidic granule environment
Inhibited by	Alpha-1-antichymotrypsin (SERPINA3); SLPI; Alpha-2-macroglobulin; synthetic small-molecule inhibitors (benzamide and pyrimidinone scaffolds)

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

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Product specifications subject to change. Contact Triple Point Biologics for current product and availability information.