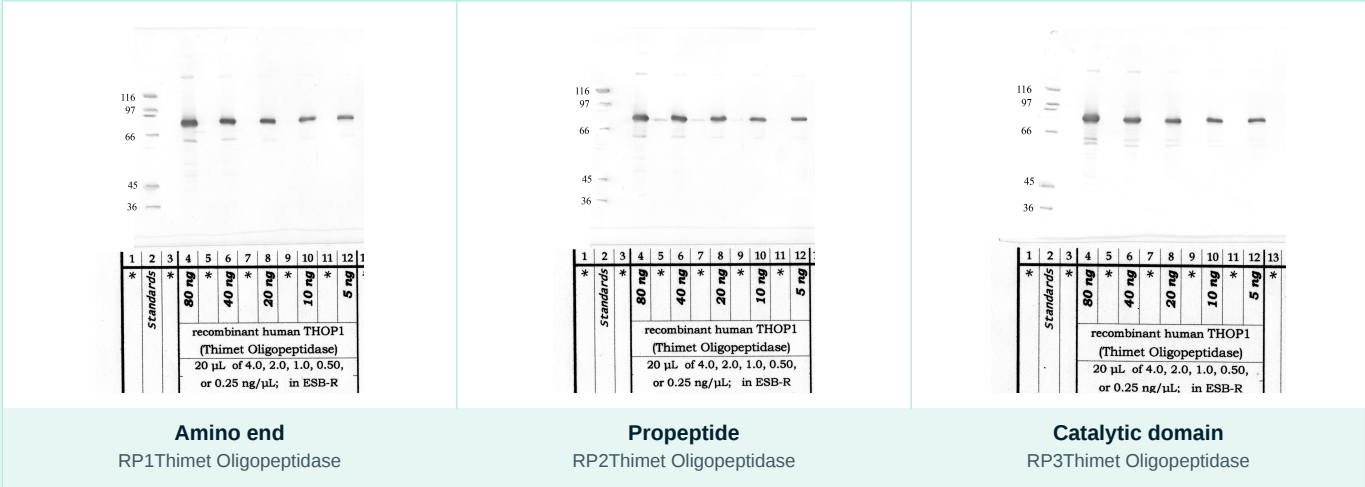


Anti-THOP1 Rabbit Polyclonal Antibody

Thimet oligopeptidase, EC 3.4.24.15, Endopeptidase 24.15, MP78,
Gene: THOP1 **UniProt:** P52888 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



— Western Blot (4-panel validation across domain-specific antibody clones)

Actual Western blot validation for anti-THOP1 rabbit polyclonal antibody. 4-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-THOP1 Rabbit Polyclonal Antibody
Gene Symbol	THOP1
Alternative Names	Thimet oligopeptidase, EC 3.4.24.15, Endopeptidase 24.15, MP78,
UniProt ID	P52888
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, 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-thimet-oligopeptidase-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of THOP1. 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
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Amino end	1–51 Region within the N-terminal segment of human THOP1, upstream of the core catalytic domain, in an area with no assigned structured subdomain that is predicted to be largely unstructured based on sequence analysis	RP1Thimet Oligopeptidase	In catalog
Propeptide	~81–160 Region spanning the proximal portion of the THOP1 polypeptide, downstream of the amino terminus and immediately preceding the fully folded catalytic core, corresponding to a transitional segment that contributes to proper enzyme folding	RP2Thimet Oligopeptidase	In catalog
Catalytic Domain	1–689 Region within the central catalytic domain of human THOP1, encompassing the HEXXH zinc-binding motif and flanking secondary structure elements that form the substrate-binding channel characteristic of M3-family metallopeptidases	RP3Thimet Oligopeptidase	In catalog
Carboxy end	639–689 Region within the C-terminal segment of human THOP1, distal to the catalytic core, in a region implicated in structural closure of the enzyme's substrate-binding cleft and proposed to contribute to the gating mechanism controlling peptide access	RP4Thimet Oligopeptidase	In catalog
—	1–689 Broad-coverage antigen spanning multiple regions of the full-length human THOP1 protein, including the N-terminal segment, catalytic domain containing the HEXXH zinc-coordination motif, and C-terminal structural elements, suitable for detection across diverse experimental contexts	RP-Thimet Oligopeptidase	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated- Human Potenti al-Mouse, Rat, 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

Family & General Biology

Thimet oligopeptidase (THOP1, EC 3.4.24.15) is a zinc-dependent metalloendopeptidase belonging to the M3 family of peptidases, subfamily M3A. The enzyme is 689 amino acids in length and harbors the canonical HEXXH zinc-binding motif characteristic of gluzincin metallopeptidases. THOP1 preferentially cleaves peptides of 6–17 residues and exhibits broad substrate specificity across that size range. The enzyme is structurally related to neurolysin (EC 3.4.24.16), its closest paralogue, with which it shares approximately 55% sequence identity and an overlapping but distinct substrate repertoire.

Expression & Localisation

THOP1 is expressed broadly, with highest levels detected in the brain, testis, and adrenal gland. In neural tissue, expression is particularly prominent in regions involved in neuropeptide signaling, including the hypothalamus, hippocampus, and cortex. The protein is predominantly cytoplasmic, consistent with its role in intracellular peptide catabolism, though evidence supports nuclear localization under certain conditions. THOP1 has also been detected in mitochondria-associated fractions in some cell types. In peripheral tissues, moderate expression is reported in liver, kidney, and skeletal muscle, placing the enzyme at sites of active peptide metabolism.

Activation & Catalytic Mechanism

THOP1 is constitutively active as a soluble monomeric enzyme under physiological cytoplasmic conditions. Catalytic activity depends on coordination of a single zinc ion by the HEXXH motif together with a downstream glutamate residue. The enzyme does not require a proenzyme cleavage event for activation; rather, activity is modulated by substrate concentration, intracellular redox state, and metal ion availability. Reducing conditions favor activity, and the enzyme is inhibited by chelating agents such as EDTA and 1,10-phenanthroline. N-ethylmaleimide also attenuates activity, implicating cysteine residues in maintaining the active conformation.

Key Substrates & Peptide Homeostasis

THOP1 cleaves a broad array of bioactive peptides under 20 residues, including bradykinin, neurotensin, substance P, angiotensin I and II, dynorphin, and LHRH. In the context of intracellular peptide homeostasis, THOP1 degrades peptides generated by the proteasome, thereby regulating the pool of intracellular peptides available for signaling. The enzyme also cleaves hemopressin, an endocannabinoid-like peptide derived from the alpha chain of hemoglobin and an inverse agonist of cannabinoid receptor CNR1, positioning THOP1 as a modulator of endocannabinoid tone.

Disease Relevance — Neurodegeneration & Oncology

THOP1 has been implicated in Alzheimer disease pathology through its capacity to process amyloid precursor protein (APP)-derived peptides, generating fragments that can contribute to or modify amyloidogenic cascades. Altered THOP1 activity

has been documented in brain tissue from Alzheimer patients relative to age-matched controls. Beyond neurodegeneration, THOP1 expression is dysregulated in several cancers, including breast and prostate carcinoma, where altered intracellular peptide signaling may influence proliferative or apoptotic pathways. Its role in MHC class I antigen presentation—through trimming of proteasome-generated peptides—also links THOP1 to immune surveillance.

MHC Antigen Presentation & Immune Function

THOP1 participates in the cytoplasmic processing of proteasomal degradation products destined for MHC class I presentation. By trimming peptides to the optimal 8–10 residue length required for loading onto MHC class I molecules, THOP1 acts in concert with other cytosolic peptidases, including leucine aminopeptidase and neurolysin, to shape the immunopeptidome. Modulation of THOP1 activity consequently affects the repertoire of peptides available for antigen presentation, with downstream consequences for CD8⁺ T-cell responses. This function places THOP1 at the intersection of intracellular proteostasis and adaptive immunity.

Gene & Protein Reference

Gene Symbol	THOP1
HGNC	HGNC:11743
NCBI Gene ID (Human)	7064
NCBI Gene ID (Mouse)	50492
Ensembl	ENSG00000117597
OMIM	600438
UniProt (Human)	P52888
UniProt (Mouse)	Q9Z1N6
Protein Family	Peptidase M3 family (gluzincin metallopeptidase, subfamily M3A)
Predicted MW	~78 kDa
Observed MW	~78–80 kDa (SDS-PAGE)
Chromosome	19q13.12
Paralogue	Neurolysin (NLN, EC 3.4.24.16)
Key Substrates	Bradykinin, neurotensin, substance P, angiotensin I/II, LHRH, dynorphin, hemopressin, proteasome-derived intracellular peptides
Activated by	Constitutively active; reducing conditions enhance activity
Inhibited by	EDTA, 1,10-phenanthroline (zinc chelators); N-ethylmaleimide; thiorphan

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.