Anti-TPP2 Rabbit Polyclonal Antibody

Tripeptidyl-peptidase 2 TPP-2, EC 3.4.14.10, Tripeptidyl aminopeptidase, Tripeptidyl-peptidase II, TPP-II,

Gene: TPP2 **UniProt:** P29144 **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-TPP2 Rabbit Polyclonal Antibody
Gene Symbol	TPP2
Alternative Names	Tripeptidyl-peptidase 2 TPP-2, EC 3.4.14.10, Tripeptidyl aminopeptidase, Tripeptidyl-peptidase II, TPP-II,
UniProt ID	P29144
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-tripeptidyl-peptidase2-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of TPP2. 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

Aminoterminal end	**2–52** Region within the N-terminal segment of human TPP2, upstream of the catalytic domain, encompassing residues involved in subunit-subunit contacts that drive formation of the spindle-shaped oligomeric complex	RP1Tripeptidyl Peptidase2	In catalog
Catalytic domain	**9–508** Region spanning the central catalytic (subtilisin-like S8 peptidase) domain of human TPP2, which houses the Asp-His-Ser catalytic triad and the substrate-binding cleft responsible for processive tripeptidyl cleavage	RP2Tripeptidyl Peptidase2	In catalog
carboxyterminal from the catalytic domain	**468–508** Region located C-terminal to the catalytic domain of human TPP2, encompassing the insertion domain and part of the C-terminal extension that contributes to complex stability and modulates substrate access to the active site	RP3Tripeptidyl Peptidase2	In catalog
carboxyterminal end	**1199–1249** Region at the distal C-terminus of human TPP2, downstream of the main catalytic and insertion domains, in a segment implicated in inter-strand contacts within the assembled spindle complex	RP4Tripeptidyl Peptidase2	In catalog
—	**2–1249** Broad immunogen spanning multiple domains of human TPP2, including the N-terminal assembly region, the central subtilisin-like catalytic domain, and the C-terminal extension, designed to maximise epitope diversity across the full-length protein	RP-Tripeptidyl Peptidase2	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

General Biology & Family

Tripeptidyl-peptidase II (TPP2; EC 3.4.14.10) is a subtilisin-type serine peptidase classified within the S8 family of clan SB. It is the largest known cytosolic peptidase in mammalian cells, assembling into a spindle-shaped homo-oligomeric complex with a native molecular weight in the megadalton range—far exceeding typical cytosolic enzymes. The catalytic mechanism relies on a classic serine protease triad (Asp-His-Ser). TPP2 processively cleaves tripeptides from the free N-termini of oligopeptides, functioning as an exopeptidase with aminopeptidase and, under specific conditions, endopeptidase activity.

Expression & Localisation

TPP2 is broadly expressed across mammalian tissues, with relatively high levels detected in tissues with elevated proteolytic demand, including liver, kidney, and lymphoid organs. At the subcellular level, the enzyme localises predominantly to the cytoplasm, where it is distributed diffusely and in discrete foci that may be associated with proteasome-rich regions. Some evidence points to nuclear localisation under specific conditions. The ubiquitous expression pattern is consistent with a housekeeping role in cytoplasmic proteolysis, and the enzyme is constitutively active rather than restricted to particular developmental stages or cell types.

Structure & Assembly

The human TPP2 polypeptide is 1,249 amino acids in length, with a predicted molecular weight of approximately 138 kDa per monomer. The mature complex assembles from two intertwined strands of stacked dimers, forming a characteristic spindle or bow-tie architecture visible by electron microscopy. This quaternary structure is essential for full catalytic activity; the isolated monomer retains minimal activity, and complex assembly is required for processive tripeptidyl cleavage. The N-terminal region contributes to inter-subunit contacts, while the catalytic domain houses the serine protease active site and governs substrate binding and cleavage specificity.

Function in the Ubiquitin-Proteasome Pathway

TPP2 operates downstream of the 26S proteasome, processing oligopeptide fragments of 8–30 residues generated by proteasomal degradation of ubiquitinated substrates. By sequentially removing N-terminal tripeptides, TPP2 reduces these intermediates to free amino acids or very short peptides, thereby preventing accumulation of potentially cytotoxic oligopeptide species. This functional coupling to the proteasome makes TPP2 an integral component of the ubiquitin-proteasome system (UPS), extending the effective degradative capacity of the pathway. Substrates include cholecystokinin-related peptides in vitro; in cells, any proteasome-generated oligopeptide with a free N-terminus is a potential physiological substrate.

Antigen Processing & Immune Relevance

TPP2 participates in MHC class I antigen presentation by trimming peptide precursors to lengths compatible with TAP transport and HLA loading. This proteasome-independent trimming activity positions TPP2 as a modulator of the immunopeptidome, influencing which peptide epitopes are ultimately displayed on the cell surface. Loss-of-function mutations in TPP2 have been associated with a primary immunodeficiency characterised by lymphopenia, autoimmune features, and defective T-cell homeostasis, underscoring the enzyme's non-redundant role in immune competence. The phenotype highlights TPP2 as more than a housekeeping peptidase.

Disease Relevance & Metabolic Roles

Beyond immunological function, TPP2 has been implicated in adipogenesis and metabolic regulation. Overexpression or dysregulation of TPP2 can promote differentiation of preadipocytes, suggesting a role in lipid metabolism that may be relevant to obesity-related research. In oncology, altered TPP2 activity has been noted in tumour cells, where it may influence antigen presentation and immune evasion. Autosomal recessive TPP2 deficiency presents clinically with recurrent infections, autoimmune cytopenias, and early-onset lymphopenia, providing a clear genotype-phenotype link that motivates continued investigation of this enzyme in clinical contexts.

Gene & Protein Reference

Gene Symbol	TPP2
HGNC	HGNC:12009
NCBI Gene ID (Human)	7174
NCBI Gene ID (Mouse)	21991
Ensembl	ENSG00000134900
OMIM	190470
UniProt (Human)	P29144
UniProt (Mouse)	Q64514
Protein Family	Peptidase S8 (subtilisin) family, clan SB
Predicted MW	~138 kDa (monomer); native complex in megadalton range
Observed MW	~130–140 kDa by SDS-PAGE (denatured monomer)
Chromosome	13q32.1 (human)
Paralogue	TPP1 (CLN2; a lysosomal serine protease of the S53 family — distinct family, functionally analogous tripeptidyl exopeptidase activity)
Key Substrates	Oligopeptides generated by the 26S proteasome; cholecystokinin-8 (in vitro); N-terminally free oligopeptides of 8–30 residues
Activated by	Complex assembly (oligomerization into spindle complex required for full activity); no defined physiological activator protein identified
Inhibited by	Butabindide (selective cell-permeable inhibitor); general serine protease inhibitors (e.g., PMSF, DFP); AAF-CMK (irreversible active-site 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

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