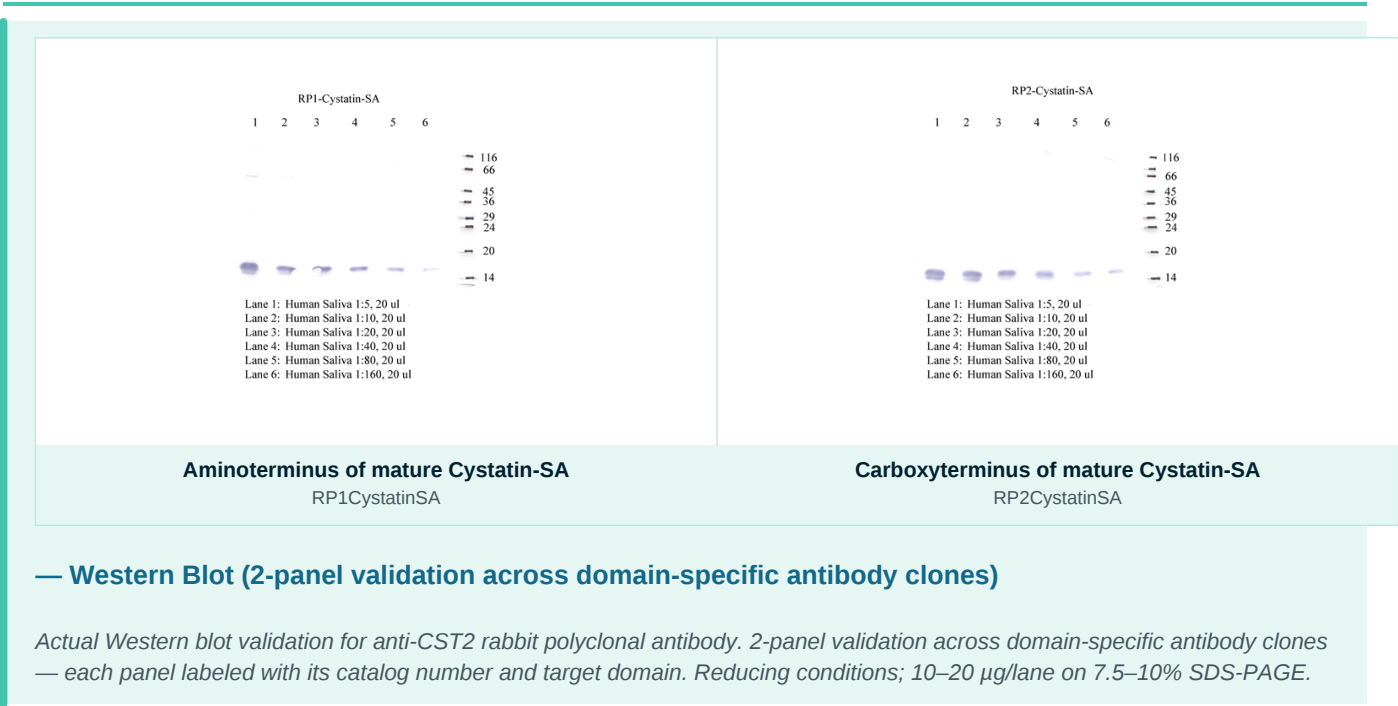


Anti-CST2 Rabbit Polyclonal Antibody

Cystatin-SA, Cystatin-2, Cystatin-S5,

Gene: CST2 UniProt: P09228 Host: Rabbit Clonality: Polyclonal (pAb)

Product Image



Key Product Facts

Supplier	Triple Point Biologics, Inc. (Sudbury, Ontario, Canada)
Product Name	Anti-CST2 Rabbit Polyclonal Antibody
Gene Symbol	CST2
Alternative Names	Cystatin-SA, Cystatin-2, Cystatin-S5,
UniProt ID	P09228
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-cystatin-sa-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CST2. 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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Aminotermminus of mature Cystatin-SA.	21–71 Region spanning the N-terminal segment of the mature secreted Cystatin-SA protein, immediately following signal peptide cleavage; this segment contributes to the first arm of the tripartite inhibitory wedge and is positioned upstream of the central α -helix in the canonical cystatin fold	RP1CystatinSA	In catalog
Carboxyterminus of mature Cystatin-SA.	91–141 Region encompassing the C-terminal portion of the mature Cystatin-SA protein, located downstream of the second hairpin loop (L2) and comprising the trailing β -strand and C-terminal tail of the cystatin fold; this region is distal to the primary protease-binding surface	RP2CystatinSA	In catalog
—	21–141 Broad coverage across the entire mature Cystatin-SA sequence, spanning the N-terminal inhibitory segment, central α -helix, β -sheet scaffold, and both hairpin loops (L1 and L2) that constitute the conserved tripartite protease-inhibitory surface of the type 1 cystatin fold	RP-CystatinSA	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

Cystatin-SA (gene symbol CST2) is a member of the type 1 cystatin superfamily — small, secreted, single-domain proteins that function as tight-binding, reversible inhibitors of papain-family cysteine proteases. Type 1 cystatins are characterised by the absence of disulfide bonds and an N-terminal glycine residue in the mature form, distinguishing them from the disulfide-containing type 2 cystatins (e.g., cystatin C). The superfamily shares a conserved inhibitory mechanism centred on a tripartite wedge formed by the N-terminal segment, the first hairpin loop (L1), and the second hairpin loop (L2), which slots into the active-site cleft of target proteases.

Expression & Secretion

CST2 expression is highly enriched in exocrine secretory tissues. Cystatin-SA is most abundant in parotid and submandibular salivary glands, and the mature protein is a major constituent of whole saliva, where it reaches concentrations sufficient for biologically meaningful protease inhibition. Lower-level expression has been reported in lacrimal glands and other mucosal epithelia. In addition to classical secretory pathways, Cystatin-SA has been detected in salivary extracellular vesicles, raising interest in its potential as a fluid-phase biomarker. Expression is subject to transcriptional regulation that can be markedly altered in neoplastic contexts.

Inhibition Mechanism & Substrate Specificity

Cystatin-SA inhibits cathepsins B, H, and L through a substrate-like, reversible interaction involving the N-terminal region and both hairpin loops engaging the catalytic cysteine/histidine dyad of the target protease. Inhibition constants (K_i) for these cathepsins fall in the low-nanomolar range, consistent with physiologically relevant regulation of extracellular and endosomal proteolysis. By restraining cathepsin-mediated degradation, Cystatin-SA limits uncontrolled turnover of extracellular matrix components, modulates antigen presentation pathways, and participates in the broader network of protease–inhibitor balance in mucosal microenvironments.

Role in Oral Biology & Mucosal Immunity

Within the oral cavity, salivary cystatins including Cystatin-SA serve as a first line of defence against bacterial and viral cysteine proteases produced by periodontal pathogens. Inhibition of gingipains and related microbial proteases by salivary cystatins is thought to limit tissue destruction at mucosal surfaces. Cystatin-SA also contributes to the protein pellicle that coats tooth enamel, where its adsorption may locally regulate enzymatic activity. These functions position CST2 as a component of innate mucosal immunity with relevance to periodontitis, dental caries, and oral inflammatory disease.

Disease Relevance & Cancer Biology

Altered CST2 expression has been reported in multiple solid tumour types. In esophageal squamous cell carcinoma and non-small cell lung cancer, transcriptional upregulation of CST2 has been associated with enhanced cell proliferation, invasive behaviour, and angiogenesis, suggesting that dysregulated cystatin-SA expression may tip the protease–inhibitor balance in ways that favour tumour progression or, alternatively, that CST2 induction reflects a host response to uncontrolled proteolysis. The protein has also been explored as a candidate salivary biomarker in cardiovascular and urological disease contexts, capitalising on its abundance and stability in easily accessible body fluids.

Protein Structure & Mature Form

The CST2 gene encodes a precursor of approximately 141 amino acids including an N-terminal signal peptide. After signal peptide cleavage, the secreted mature protein of roughly 120–121 residues adopts the canonical cystatin fold: a five-stranded antiparallel β -sheet wrapped around a central α -helix. The predicted molecular weight of the mature protein is approximately 14 kDa; apparent molecular weight on reducing SDS-PAGE is consistent with the monomeric form and the absence of disulfide-mediated crosslinks. No N-glycosylation sites have been annotated, consistent with the relatively compact, unmodified form observed by gel electrophoresis.

Gene & Protein Reference

Gene Symbol	CST2
HGNC	2474
NCBI Gene ID (Human)	1470
NCBI Gene ID (Mouse)	13010
Ensembl	ENSG00000109891
OMIM	123760
UniProt (Human)	P09228
UniProt (Mouse)	P21460
Protein Family	Cystatin superfamily, type 1 (stefin/cystatin family); subfamily: salivary cystatins
Predicted MW	~14 kDa (mature secreted form, signal peptide cleaved)
Observed MW	~14 kDa on reducing SDS-PAGE
Chromosome	20p11.21 (human CST gene cluster)
Paralogue	CST1 (Cystatin-SN), CST4 (Cystatin-S), CST5 (Cystatin-D); all encoded within the chromosome 20 CST gene cluster
Key Substrates	Cathepsin B, Cathepsin H, Cathepsin L (endogenous cysteine cathepsins); microbial cysteine proteases including bacterial gingipains
Activated by	N/A — Cystatin-SA is a protease inhibitor, not a protease; no known zymogen activation step
Inhibited by	Activity is not regulated by known endogenous inhibitors of the inhibitor; loss of function reported in certain cancer contexts via transcriptional silencing

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.