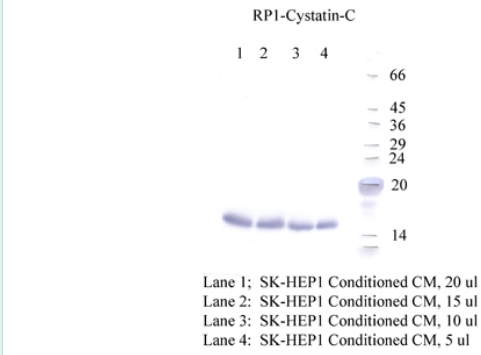
Anti-CSTC Rabbit Polyclonal Antibody

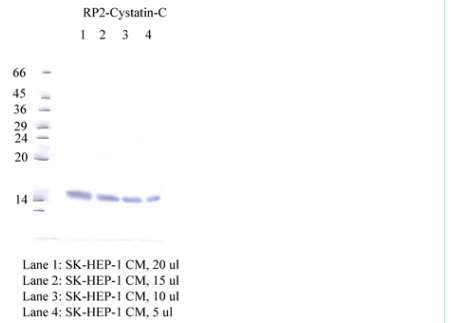
Cystatin-C, Cystatin-3, Gamma-trace, Neuroendocrine basic polypeptide, Post-gamma-globulin,

Gene: CSTC **UniProt:** P01034 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



Aminoterminus of mature Cystatin-C
RP1CystatinC



Carboxyterminal beta sheet domain
RP2CystatinC

— Western Blot (2-panel validation across domain-specific antibody clones)

Actual Western blot validation for anti-CSTC rabbit polyclonal antibody. 2-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-CSTC Rabbit Polyclonal Antibody
Gene Symbol	CSTC
Alternative Names	Cystatin-C, Cystatin-3, Gamma-trace, Neuroendocrine basic polypeptide, Post-gamma-globulin,
UniProt ID	P01034
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-c-rabbit-polyclonal-antibody

Available Domain-Specific Variants

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

Aminoterminus of mature Cystatin-C.	**27–77** Region spanning the N-terminal trunk of mature Cystatin-C (post signal-peptide cleavage at residue 26 of the precursor), encompassing the flexible N-terminal segment that contributes one of the three contact regions engaging the active-site cleft of target cysteine proteinases, upstream of the central α-helix	RP1CystatinC	In catalog
Carboxytermiminal beta sheet domain.	**96–146** Region within the C-terminal portion of the five-stranded antiparallel β-sheet domain of mature Cystatin-C, encompassing the second hairpin loop (loop 2) and the terminal β-strands that form the distal face of the wedge-shaped proteinase-binding surface, downstream of the central α-helix and first hairpin loop	RP2CystatinC	In catalog
—	**27–146** Broad epitope coverage spanning the full length of mature Cystatin-C, incorporating determinants from the N-terminal trunk, the central α-helix, both hairpin loops (loop 1 QVVAG region and loop 2), and the C-terminal β-sheet domain, providing reactivity regardless of local conformational variation or domain-specific masking	RP-CystatinC	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

Protein Family and General Biology

Cystatin-C (gene: CST3; UniProt P01034) is a member of the type 2 cystatin family, a group of small, secreted cysteine protease inhibitors characterised by a conserved structural fold comprising an α-helix packed against a five-stranded antiparallel β-sheet. The mature protein is 120 amino acids in length, generated after cleavage of a 26-residue signal peptide. Cystatin-C functions as a tight-binding, competitive, reversible inhibitor of papain-like (C1 family) cysteine proteinases, achieving inhibition constants in the picomolar to low nanomolar range against its principal targets.

Expression and Secretion

Cystatin-C is constitutively expressed by virtually all nucleated cells in the human body, at a remarkably constant rate largely independent of sex, age, or lean body mass in healthy individuals. This ubiquitous expression results in a stable plasma concentration that is maintained primarily through continuous secretion and subsequent free filtration across the glomerular membrane. The protein is present in cerebrospinal fluid, seminal plasma, saliva, urine, and milk, reflecting its broad extracellular distribution and role as a first-line inhibitor of extracellular cysteine protease activity.

Inhibition Mechanism and Key Substrates

Cystatin-C inhibits cysteine proteinases through a substrate-like mechanism in which two hairpin loop regions (loop 1, the QVVAG motif region; loop 2) together with the N-terminal trunk engage the active-site cleft of the target enzyme in a non-covalent, wedge-shaped complex. Principal substrates of the inhibited enzymes—and hence regulated by Cystatin-C—include extracellular matrix components cleaved by cathepsins B, H, K, L, and S. Cathepsin K-mediated collagen degradation, cathepsin B-driven pro-MMP activation, and cathepsin L-dependent antigen presentation are among the well-documented processes modulated by Cystatin-C availability.

Disease Relevance: Renal Function and Cardiovascular Risk

Because Cystatin-C is freely filtered at the glomerulus and almost entirely reabsorbed and catabolised by proximal tubular epithelial cells, its serum concentration rises sharply with declining glomerular filtration rate (GFR). Serum Cystatin-C has been validated as a GFR biomarker that is less confounded by muscle mass, diet, or inflammatory state than serum creatinine, making it particularly useful in populations where creatinine estimation is unreliable. Elevated circulating Cystatin-C has also been associated with cardiovascular risk, arterial stiffness, and heart failure, independent of GFR, suggesting roles beyond passive filtration marker.

Neurodegeneration and Amyloidogenesis

A single amino acid substitution in the signal peptide (Ala25Thr) generates a variant form of Cystatin-C that misfolds and forms amyloid deposits in cerebral blood vessel walls, causing hereditary cystatin C amyloid angiopathy (HCCAA). Beyond this rare monogenic disease, Cystatin-C co-deposits with amyloid-β in sporadic Alzheimer's disease lesions, and experimental evidence indicates it can modulate amyloid-β aggregation. Cystatin-C is among the most abundant proteins in cerebrospinal fluid, consistent with a physiological role in regulating cathepsin-mediated proteolysis in the central nervous system.

Roles in Tumour Biology and Extracellular Matrix Remodelling

By restraining cathepsin B, K, L, and S activity in the tumour microenvironment, Cystatin-C acts as a potential endogenous tumour suppressor of invasion and metastasis. Reduced Cystatin-C expression or an imbalance between Cystatin-C and cathepsin levels has been reported in several carcinoma types, correlating with increased invasive potential. Conversely, in osteoclast-mediated bone resorption, cathepsin K activity is critically limited by local Cystatin-C concentrations, making this balance relevant to osteoporosis and bone metastasis research.

Gene & Protein Reference

Gene Symbol	CSTC
HGNC	2475
NCBI Gene ID (Human)	1471
NCBI Gene ID (Mouse)	13010
Ensembl	ENSG00000101439
OMIM	604312
UniProt (Human)	P01034
UniProt (Mouse)	P21460
Protein Family	Type 2 cystatin family (cysteine protease inhibitor)
Predicted MW	15.8 kDa (mature form, 120 aa); ~13.4 kDa signal-peptide-cleaved core
Observed MW	~13–16 kDa on SDS-PAGE (varies with glycosylation state; Cystatin-C is not N-glycosylated but migrates anomalously)
Chromosome	20p11.21
Paralogue	Cystatin-A (CSTA, type 1), Cystatin-B (CSTB, type 1), Cystatin-D (CSTD), Cystatin-S (CSTS), Cystatin-SN (CSTSN)
Key Substrates	Indirect — regulates cathepsin B, H, K, L, and S cleavage of collagen, elastin, and other extracellular matrix proteins; modulates cathepsin B-mediated pro-MMP activation
Activated by	N/A — Cystatin-C is a constitutively secreted inhibitor; activity is not regulated by a conventional activation step
Inhibited by	Cystatin-C itself is not inhibited by endogenous proteins under physiological conditions; its inhibitory activity is attenuated by low pH (lysosomal conditions) and by glycosaminoglycan binding (e.g., heparin)

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.