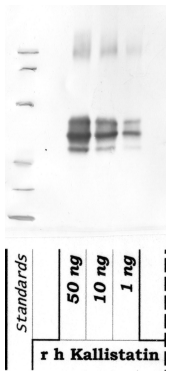
Anti-SERPINA4 Rabbit Polyclonal Antibody

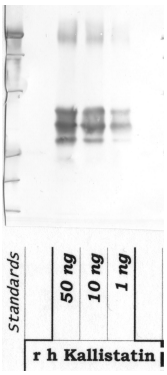
Kallistatin Kallikrein inhibitor, Peptidase inhibitor 4, PI-4, Serpin A4,

Gene: SERPINA4 **UniProt:** P29622 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

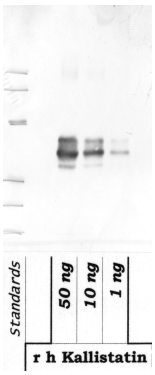
Product Image



N-terminal domain
RP1Kallistatin



Reactive center loop
RP2Kallistatin



C-terminal region
RP3Kallistatin

— Western Blot (3-panel validation across domain-specific antibody clones)

Actual Western blot validation for anti-SERPINA4 rabbit polyclonal antibody. 3-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-SERPINA4 Rabbit Polyclonal Antibody
Gene Symbol	SERPINA4
Alternative Names	Kallistatin Kallikrein inhibitor, Peptidase inhibitor 4, PI-4, Serpin A4,
UniProt ID	P29622
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-Pan, Monkey
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-serpin-a4-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of SERPINA4. 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

Amino end mature Serpin-A4	**21–71** Region spanning the amino-terminal segment of the mature Kallistatin protein, encompassing the N-terminal portion of helix A and the first beta-strand cluster; this region lies distal to the reactive center loop and contains part of the first heparin-binding domain implicated in cell-surface proteoglycan interactions	RP1SerpinA4	In catalog
Helix 4 to Helix 5	**~160–230 (mature protein numbering)** Region spanning the transition between helices hD and hE of the canonical serpin fold, located within the body of the serpin scaffold between the A and B beta-sheet systems; this segment contributes to the structural core that undergoes reorientation during the RCL-insertion conformational transition upon protease engagement	RP2SerpinA4	In catalog
Second heparin binding site	**~270–340 (mature protein numbering)** Region encompassing the second heparin-binding domain of Kallistatin, situated in the mid-to-C-terminal body of the serpin between the strand 3A region and helix hF; basic residues within this surface-exposed segment mediate electrostatic interactions with heparan sulfate proteoglycans independently of the primary inhibitory RCL	RP3SerpinA4	In catalog
—	**21–427** Broad-coverage antigen spanning the complete mature Kallistatin sequence, including the amino-terminal heparin-binding region, central serpin scaffold helices and beta-sheets, and the carboxy-terminal reactive center loop region; suitable for detection of both native and denatured forms across multiple experimental contexts	RP-SerpinA4	In catalog
—	—	RP-Kallistatin	In catalog
—	N-terminal domain	RP1Kallistatin	In catalog
—	Reactive center loop	RP2Kallistatin	In catalog
—	C-terminal region	RP3Kallistatin	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated-Human Potential-Pan, Monkey	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

Serpin Family & Clade A Context

SERPINA4 encodes Kallistatin (Serpin A4), a secreted member of the clade A serpin superfamily — a group that includes alpha-1-antitrypsin, antithrombin, and other plasma protease inhibitors with roles in hemostasis, inflammation, and blood pressure regulation. Like all functional serpins, Kallistatin adopts the characteristic three-beta-sheet, nine-alpha-helix fold with a solvent-exposed reactive center loop (RCL) that acts as pseudosubstrate bait for its target protease. The mature protein comprises 427 amino acids after signal peptide cleavage and carries N-linked glycosylation that contributes to its observed molecular weight of approximately 58–68 kDa on reducing SDS-PAGE.

Expression & Localisation

Kallistatin is synthesised predominantly in the liver and released into the systemic circulation, where it is detectable in plasma at concentrations in the low micromolar range in healthy adults. Extrahepatic expression has been documented in kidney tubular epithelial cells, vascular smooth muscle, and cardiac tissue — sites of physiological relevance to the kallikrein-kinin axis. The protein is entirely secreted; no transmembrane or GPI-anchored isoforms have been described. Tissue-level immunohistochemical studies consistently localise Kallistatin to the cytoplasm of parenchymal and epithelial cells prior to secretion into the extracellular compartment.

Inhibition Mechanism & Tissue Kallikrein Selectivity

Kallistatin acts as a selective, irreversible inhibitor of tissue kallikrein (KLK1) through the canonical serpin suicide-substrate mechanism. The scissile bond within the RCL is cleaved by KLK1, triggering a large conformational change that inserts the RCL as strand 4 of beta-sheet A and translocates the covalently acylated protease to the opposite pole of the inhibitor. The resulting equimolar SDS- and heat-stable complex is detectable by Western blot as a high-molecular-weight band. This inhibitory specificity is determined in part by the P1 residue (Phe) of the RCL, which complements the broad specificity pocket of KLK1. Kallistatin does not measurably inhibit plasma kallikrein or plasmin under physiological conditions.

Heparin Binding & Non-Inhibitory Functions

Kallistatin contains at least two heparin-binding domains that mediate interactions with cell-surface heparan sulfate proteoglycans independently of its anti-protease activity. Through these interactions, Kallistatin binds tissue kallikrein in a heparin-dependent manner and also engages vascular endothelial cells to modulate angiogenic signalling. Separate heparin-binding sequences in the amino-terminal region and within the body of the serpin fold have been mapped, and mutations at these sites dissociate the anti-angiogenic and anti-inflammatory functions from kallikrein inhibition, demonstrating

that Kallistatin exerts pleiotropic biological effects beyond simple protease inhibition.

Cardiovascular, Renal & Inflammatory Roles

By inhibiting tissue kallikrein, Kallistatin restrains kinin generation from low-molecular-weight kininogen, thereby modulating bradykinin-mediated vasodilation, vascular permeability, and inflammatory cell recruitment. In vascular biology, Kallistatin has been shown to oppose TNF-alpha-induced endothelial activation, reduce reactive oxygen species production, and inhibit VEGF-driven angiogenesis. In the kidney, reduced Kallistatin levels correlate with progression of diabetic nephropathy, hypertensive renal injury, and proteinuria, consistent with a protective role in tubular and glomerular homeostasis. These findings place SERPINA4 at a functional intersection of the renin-angiotensin-aldosterone and kallikrein-kinin systems.

Disease Relevance & Translational Significance

Decreased circulating Kallistatin has been reported in patients with hypertension, heart failure, diabetes, and several inflammatory conditions, positioning it as a candidate disease-associated biomarker. In cancer biology, Kallistatin expression is reduced in colorectal, hepatocellular, and oesophageal carcinomas, and experimental overexpression suppresses tumour angiogenesis and growth in preclinical models. Conversely, the kallikrein-kinin axis that Kallistatin regulates is implicated in tumour microenvironment remodelling and pro-tumourigenic signalling. These translational contexts make Kallistatin-specific antibodies useful not only for expression profiling by Western blot, but also for investigating complex formation and pathway activity in disease-relevant tissues.

Gene & Protein Reference

Gene Symbol	SERPINA4
HGNC	HGNC:8941
NCBI Gene ID (Human)	5267
NCBI Gene ID (Mouse)	18387
Ensembl	ENSG00000154174
OMIM	147930
UniProt (Human)	P29622
UniProt (Mouse)	Q9Z1P2
Protein Family	Serpin superfamily, clade A (alpha-1-antiproteinase)
Predicted MW	48.7 kDa (unglycosylated, mature form)
Observed MW	58–68 kDa (glycoprotein; SDS-PAGE, reducing conditions)
Chromosome	14q32.13
Paralogue	SERPINA1 (alpha-1-antitrypsin), SERPINA3 (alpha-1-antichymotrypsin), SERPINA5 (protein C inhibitor)
Key Substrates	Tissue kallikrein (KLK1) — forms covalent, SDS-stable complex; inhibits both amidolytic and kininogenase activities of KLK1

Activated by	Not applicable (inhibitor); heparin binding enhances interaction with tissue kallikrein
Inhibited by	Not applicable as an inhibitor; Kallistatin itself is consumed (stoichiometric) upon KLK1 complex formation

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