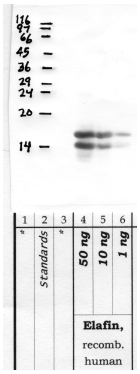
Anti-PI3 Rabbit Polyclonal Antibody

Elafin Elastase-specific inhibitor, ESI, Peptidase inhibitor 3, PI-3, Protease inhibitor WAP3, Skin-derived antileukoproteinase, SKALP, WAP four-disulfide core domain protein 14,

Gene: PI3 **UniProt:** P19957 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



Â middle of human Elafin
RP1Elafin

— Western Blot (1-panel validation)

Actual Western blot validation for anti-PI3 rabbit polyclonal antibody. 1-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-PI3 Rabbit Polyclonal Antibody
Gene Symbol	PI3
Alternative Names	Elafin Elastase-specific inhibitor, ESI, Peptidase inhibitor 3, PI-3, Protease inhibitor WAP3, Skin-derived antileukoproteinase, SKALP, WAP four-disulfide core domain protein 14,
UniProt ID	P19957
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-Monkey, 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-elafin-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of PI3. 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

Â middle of human Elafin	**~55–85** Region within the central portion of the mature elafin sequence, spanning the junction between the C-terminal end of the trappin (transglutaminase substrate) domain and the beginning of the WAP four-disulfide core inhibitory domain; this segment lies downstream of the N-terminal cross-linking motif and upstream of the conserved reactive-site loop of the WAP domain	RP1Elafin	In catalog
—	**61–117** Broad region encompassing the majority of the mature secreted elafin protein, including both the N-terminal trappin/transglutaminase substrate domain and the C-terminal WAP four-disulfide core inhibitory domain; this multi-domain immunogen is expected to generate antibodies against epitopes distributed across the full-length processed protein	RP-Elafin	In catalog

Applications & Recommended Dilutions

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

General Biology and Protein Family

Elafin (encoded by PI3; UniProt P19957) is a 117-amino acid secreted serine protease inhibitor belonging to the whey acidic protein (WAP) four-disulfide core (WFDC) domain family. Its compact structure is stabilized by eight conserved cysteine residues arranged in two four-disulfide core domains: a transglutaminase substrate domain (trappin domain) at the N-terminus and a canonical WAP/WFDC inhibitory domain at the C-terminus. This dual-domain architecture distinguishes elafin from single-WAP-domain relatives such as secretory leukocyte protease inhibitor (SLPI) and underlies both its cross-linking into extracellular matrix and its protease inhibitory capacity.

Expression and Localisation

Elafin is constitutively expressed at low levels in epithelial tissues, including skin keratinocytes, bronchial epithelium, oral mucosa, and the female reproductive tract. Expression is strongly upregulated by pro-inflammatory stimuli — notably TNF-α, IL-1β, and bacterial lipopolysaccharide — positioning elafin as an inducible first-line defense protein. The protein is secreted into the extracellular space and can be covalently cross-linked to fibronectin and other matrix proteins via transglutaminase-mediated isopeptide bonds, creating a depot of inhibitory activity at sites of neutrophil infiltration and tissue remodeling.

Protease Inhibitory Mechanism and Substrates

Elafin functions as a tight-binding competitive inhibitor of serine proteases. Its WAP domain presents a reactive-site loop that docks into the active site of target enzymes, principally human neutrophil elastase (HNE) and pancreatic elastase II. Inhibition constants (Ki) for HNE are in the low nanomolar range. Elafin does not significantly inhibit other neutrophil serine proteases such as proteinase 3 or cathepsin G at physiological concentrations, conferring selectivity not shared by the related inhibitor SLPI. By blocking elastase, elafin protects elastin, fibronectin, vitronectin, and related extracellular matrix components from proteolytic degradation during acute and chronic inflammation.

Antimicrobial and Anti-inflammatory Functions

Beyond protease inhibition, elafin exhibits direct antimicrobial activity against Gram-positive and Gram-negative bacteria as well as Candida species, placing it within the broader category of host-defense peptides. Separately, elafin has been reported to modulate TLR4 and NF-κB signaling pathways, attenuating pro-inflammatory cytokine production independently of its antiprotease function. These dual roles — enzymatic inhibition and direct immune modulation — make elafin a bifunctional mediator at epithelial barriers. Additionally, published data indicate that elafin can inhibit the α4β2 nicotinic acetylcholine receptor and exert weak modulatory effects on Kv11.1 and TRPV1 channels, though the physiological relevance of these interactions remains an area of active investigation.

Disease Relevance

Altered elafin expression has been documented across a range of inflammatory and neoplastic conditions. In chronic obstructive pulmonary disease (COPD), reduced elafin levels correlate with increased elastase burden and accelerated matrix degradation. In psoriasis, elafin is markedly overexpressed in affected epidermis and is considered a disease marker. In wound healing, elafin expression accompanies re-epithelialization and is thought to protect newly formed matrix from neutrophil-derived proteolysis. Paradoxically, reduced elafin expression has been associated with worse prognosis in certain epithelial cancers, including ovarian and lung carcinomas, suggesting a tumor-suppressive function linked to both protease control and immune modulation.

Research Applications

Immunodetection of elafin in tissue sections and cell lysates requires antibodies capable of recognizing the native folded epitopes within the WAP domain or the linear epitopes of the trappin N-terminal domain, since disulfide reduction during SDS-PAGE denaturing conditions exposes linear determinants not accessible in native protein. Researchers routinely use elafin antibodies in Western blot to confirm expression in primary keratinocytes, bronchial epithelial cell lines, and clinical tissue biopsies, and in immunohistochemistry to localize elafin to the upper spinous and granular layers of stratified epithelium. Recombinant elafin standards are used alongside antibody detection to establish quantitative assays for elafin in bronchoalveolar lavage and wound fluid.

Gene & Protein Reference

Gene Symbol	PI3
HGNC	HGNC:8949
NCBI Gene ID (Human)	5266
NCBI Gene ID (Mouse)	18820
Ensembl	ENSG00000124102
OMIM	130120
UniProt (Human)	P19957
UniProt (Mouse)	P97439
Protein Family	WAP four-disulfide core (WFDC) domain family; serine protease inhibitor
Predicted MW	~12 kDa (mature secreted form); ~15 kDa (trappin-2 precursor with signal peptide removed)
Observed MW	~12–18 kDa by SDS-PAGE (variability due to cross-linking and glycosylation state)
Chromosome	20q12–q13.2
Paralogue	SLPI (Secretory Leukocyte Protease Inhibitor, WAP domain); WFDC1; WFDC2 (HE4)
Key Substrates	Neutrophil elastase (HNE), pancreatic elastase II; protects elastin, fibronectin, and vitronectin from elastase-mediated degradation
Activated by	Upregulated transcriptionally by TNF-α, IL-1β, and LPS; transglutaminase-mediated cross-linking anchors secreted protein to extracellular matrix
Inhibited by	No endogenous inhibitor of elafin activity established; disulfide reduction abolishes WAP-domain inhibitory function

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.