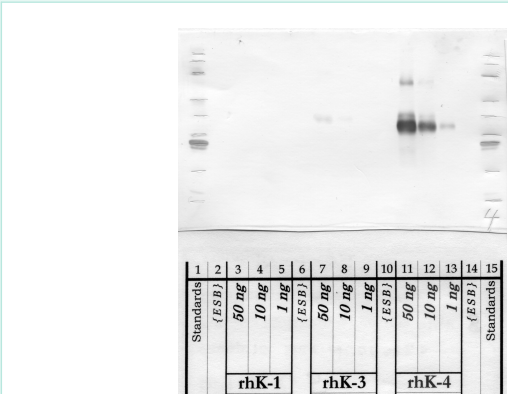


Anti-KLK4 Rabbit Polyclonal Antibody

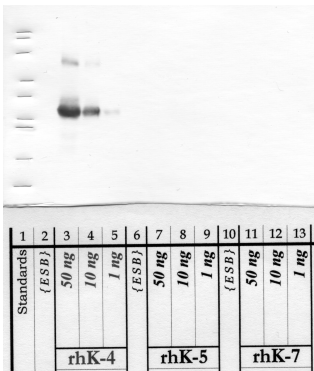
Kallikrein-4, EC 3.4.21.-, Enamel matrix serine proteinase 1, Kallikrein-like protein 1, KLK-L1, Prostase, Serine protease 17,

Gene: KLK4 **UniProt:** Q9Y5K2 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



Kallikrein loop
RP1Kallikrein4



Catalytic domain
RP2Kallikrein4

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

Actual Western blot validation for anti-KLK4 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-KLK4 Rabbit Polyclonal Antibody
Gene Symbol	KLK4
Alternative Names	Kallikrein-4, EC 3.4.21.-, Enamel matrix serine proteinase 1, Kallikrein-like protein 1, KLK-L1, Prostase, Serine protease 17,
UniProt ID	Q9Y5K2
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, Dog, 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-kallikrein-4-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of KLK4. 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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Kallikrein loop	~70–90 Region within the kallikrein loop of the mature KLK4 serine protease domain — a surface-exposed, hypervariable insertion between beta-strands that is structurally analogous to the 99-loop of trypsin and confers family-member specificity; situated between the N-terminal beta-barrel and the active-site cleft	RP1Kallikrein4	In catalog
Catalytic domain	31–254 Region spanning the core trypsin-like serine protease domain of mature KLK4, encompassing the double beta-barrel scaffold and the Asp-His-Ser catalytic triad residues; this domain is conserved across the KLK family and is present in both the zymogen and the activated, propeptide-cleaved form of the enzyme	RP2Kallikrein4	In catalog
—	31–254 Broad region covering the full-length KLK4 pre-pro-enzyme sequence, including the signal peptide, N-terminal propeptide, and the complete catalytic serine protease domain; provides epitope coverage across multiple structural regions of the zymogen and mature enzyme, suitable for detection of multiple processed forms	RP-Kallikrein4	In catalog

Applications & Recommended Dilutions

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

Family & General Biology

Kallikrein-4 (KLK4) is a secreted, trypsin-like serine protease belonging to the tissue kallikrein (KLK) family, a 15-member cluster of structurally related serine endopeptidases encoded in a contiguous locus on chromosome 19q13.4. Like other kallikreins, KLK4 harbors the canonical Asp-His-Ser catalytic triad and cleaves substrates C-terminal to basic residues, particularly arginine. Its closest structural relatives within the family include KLK5 and KLK14, with which it shares overlapping substrate specificity and co-expression in stratified epithelia. KLK4 is synthesized as a pre-pro-enzyme: a signal peptide directs secretion, and an N-terminal propeptide must be removed for activation.

Expression & Tissue Distribution

KLK4 expression is most abundant in ameloblasts during the maturation stage of tooth development, where it is secreted into the enamel matrix. Significant transcript levels have also been detected in prostate epithelium, thyroid, salivary gland, and uterus, suggesting roles beyond odontogenesis. In the prostate, KLK4 expression is androgen-regulated, placing it in the broader context of androgen-responsive kallikreins alongside PSA (KLK3) and KLK2. Transcript profiling datasets consistently rank dental tissues as the dominant site of KLK4 protein output, with prostate representing the principal extra-dental source detectable at the protein level.

Activation Mechanism

KLK4 is secreted as an inactive zymogen and requires proteolytic removal of its propeptide for activation. Trypsin and several other kallikreins, including KLK5, are capable of processing pro-KLK4 in vitro, consistent with cascade-style activation networks described for epidermal and enamel kallikreins. Once active, KLK4 itself can participate in reciprocal activation of other family members, forming a protease web. In dental tissue, the precise physiological activator in vivo has not been definitively established, though MMP-20 activity during the secretory stage precedes and likely primes the matrix for KLK4-mediated degradation during maturation.

Key Substrates & Inhibitor Profile

The principal biological substrates of KLK4 in dental enamel are the matrix proteins amelogenin, ameloblastin, and enamelin. KLK4-mediated cleavage of these proteins generates smaller fragments that are endocytosed by maturation-stage ameloblasts, permitting hydroxyapatite crystals to expand laterally and produce the hardened, translucent enamel of mature teeth. KLK4 is inhibited by serine protease inhibitors including alpha-2-macroglobulin and members of the Kazal-type inhibitor family. LEKTI (SPINK5-encoded) has been identified as a physiologically relevant kallikrein inhibitor in stratified epithelia, and its absence leads to uncontrolled kallikrein activity in skin desquamation disorders.

Disease Relevance

Loss-of-function mutations in KLK4 cause autosomal recessive hypomaturation amelogenesis imperfecta (AI), a hereditary enamel defect characterized by enamel of normal thickness but reduced mineral density, resulting in chalky, discolored, and fracture-prone teeth. The KLK4-null mouse phenocopies human hypomaturation AI, confirming its non-redundant role in enamel maturation. In oncology, elevated KLK4 expression has been reported in prostate, ovarian, and breast cancers, where it may contribute to degradation of extracellular matrix components and promotion of tumor cell invasion, though its precise pathophysiological contributions in these contexts remain under active investigation.

Research Utility

Detection of KLK4 protein is relevant across studies of amelogenesis, inherited enamel disorders, and prostate cancer biology. Antibodies directed against the kallikrein loop — a surface-exposed, structurally variable region that confers family-member specificity — are particularly useful for distinguishing KLK4 from closely related paralogs such as KLK5 in Western blot and

immunohistochemical applications. Antibodies targeting the catalytic domain complement loop-directed reagents by enabling detection of the mature, processed enzyme regardless of loop epitope accessibility. Multi-domain preparations are suitable where broad epitope coverage across zymogen and mature forms is desired.

Gene & Protein Reference

Gene Symbol	KLK4
HGNC	6363
NCBI Gene ID (Human)	9622
NCBI Gene ID (Mouse)	93689
Ensembl	ENSG00000167749
OMIM	606818
UniProt (Human)	Q9Y5K2
UniProt (Mouse)	P58501
Protein Family	Tissue kallikrein (KLK) family; clan PA, family S1 serine proteases
Predicted MW	~28 kDa (mature form); ~31 kDa (including propeptide)
Observed MW	~25–30 kDa (Western blot; glycosylation-dependent variation reported)
Chromosome	19q13.41
Paralogue	KLK5, KLK14 (closest within kallikrein locus; overlapping trypsin-like specificity)
Key Substrates	Amelogenin, ameloblastin, enamelin; extracellular matrix components including fibronectin and IGF-binding proteins reported in vitro
Activated by	Trypsin; KLK5 (in vitro kallikrein cascade); upstream MMP-20 activity conditions the matrix
Inhibited by	Alpha-2-macroglobulin; Kazal-type inhibitors; LEKTI (SPINK5-encoded serine protease 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.