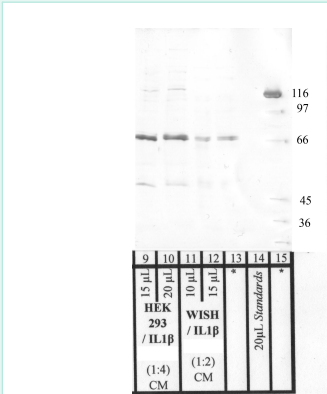


Anti-PAPPA Rabbit Polyclonal Antibody

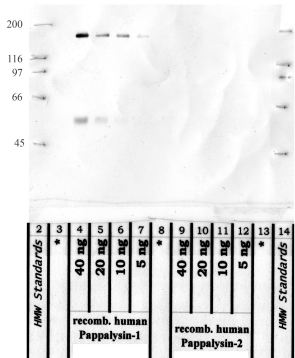
Pappalysin-1, EC 3.4.24.79, Insulin-like growth factor-dependent IGF-binding protein 4 protease, IGF-dependent IGFBP-4 protease, IGFBP-4ase, Pregnancy-associated plasma protein A, PAPP-A,

Gene: PAPPA **UniProt:** Q13219 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

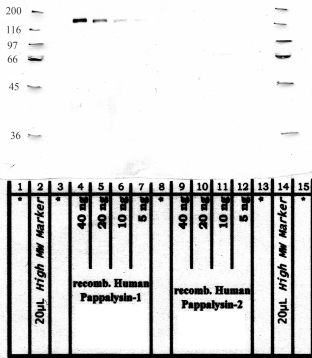
Product Image



Propeptide domain
RP1Pappalysin1



Carboxy end Propeptide Domain
RP2Pappalysin1



LamGL Domain
RP3Pappalysin1

— Western Blot (5-panel validation across domain-specific antibody clones)

Actual Western blot validation for anti-PAPPA rabbit polyclonal antibody. 5-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-PAPPA Rabbit Polyclonal Antibody
Gene Symbol	PAPPA
Alternative Names	Pappalysin-1, EC 3.4.24.79, Insulin-like growth factor-dependent IGF-binding protein 4 protease, IGF-dependent IGFBP-4 protease, IGFBP-4ase, Pregnancy-associated plasma protein A, PAPP-A,
UniProt ID	Q13219
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-Mouse, Rat
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-pappalysin-1-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of PAPPA. 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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Propeptide Domain	23–81 Region within the N-terminal propeptide of human PAPPA, which occludes the active-site zinc in the zymogen form and is removed during autocatalytic or partner-mediated activation to yield the mature metalloproteinase	RP1Pappalysin 1	In catalog
Carboxy end Propeptide Domain	61–81 Region spanning the C-terminal portion of the PAPPA propeptide, immediately proximal to the cleavage site that separates the inhibitory prodomain from the catalytic region of the mature enzyme	RP2Pappalysin 1	In catalog
LamGL Domain	~700–900 Region within the LamGL (laminin G-like) module of PAPPA, a non-catalytic structural domain located in the central portion of the protein that is implicated in substrate recognition, cell-surface association, and interaction with heparan sulfate proteoglycans	RP3Pappalysin 1	In catalog
Catalytic Domain	82–1627 Region within the metzincin-type catalytic domain of PAPPA, encompassing the zinc-binding HEXHXXGXXH motif and the substrate-binding cleft responsible for IGF-dependent proteolytic cleavage of IGFBP-4 and IGFBP-5	RP4Pappalysin 1	In catalog
Carboxyterminal end	1577–1627 Region at the C-terminal end of the full-length PAPPA protein, distal to the LamGL and CCP/SCR modules, representing the tail segment of the mature secreted homodimer	RP5Pappalysin 1	In catalog
—	82–1627 Broad multi-domain immunogen spanning structural elements across the full-length PAPPA protein, suitable for general detection of the zymogen and mature forms without restriction to a single functional module	RP-Pappalysin 1	In catalog

Applications & Recommended Dilutions

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

Pappalysin-1 (PAPPA) is a secreted zinc-dependent metalloproteinase and the founding member of the pappalysin subfamily within the metzincin superfamily. The mature protein spans 1,627 amino acids and adopts a large, modular architecture that distinguishes it from classic matrix metalloproteinases. PAPPA functions primarily as a regulator of local IGF signaling: it cleaves insulin-like growth factor-binding proteins IGFBP-4 and IGFBP-5, releasing sequestered IGF-1 and IGF-2 and increasing their availability to cognate receptors. This positions PAPPA as an indirect amplifier of IGF-driven proliferation, differentiation, and survival responses.

Expression & Localization

PAPPA is expressed broadly across multiple tissues, with particularly high levels in the placenta, decidua, and uterine endometrium during gestation. Expression is also documented in osteoblasts, vascular smooth muscle cells, cardiac fibroblasts, and atherosclerotic plaques. The protein is secreted into the extracellular environment and can associate with the cell surface or pericellular matrix through interaction with heparan sulfate proteoglycans. Circulating PAPPA concentrations in maternal serum rise progressively during the first trimester of pregnancy, reflecting placental synthesis, and this pattern underpins its established clinical utility as a prenatal screening analyte.

Activation Mechanism & Proprotein Processing

PAPPA is synthesized as an inactive zymogen with an N-terminal prodomain that occludes the active-site zinc. Autocatalytic removal of this propeptide, or processing by a co-expressed partner, generates the catalytically competent form. In circulation and in tissues, PAPPA can form a non-covalent or covalent heterotetrameric complex with the proform of eosinophil major basic protein (proMBP), a naturally occurring inhibitor. Binding of proMBP to PAPPA sterically blocks access to the substrate-binding cleft and abolishes proteolytic activity, effectively serving as an endogenous regulatory switch during pregnancy.

Substrate Specificity & IGF Dependency

The two established physiological substrates of PAPPA are IGFBP-4 and IGFBP-5. Cleavage of IGFBP-4 is strongly enhanced — by several orders of magnitude — by the prior binding of IGF-1 or IGF-2 to the substrate, a mechanism termed IGF-dependent proteolysis that confers spatial and contextual specificity to IGF liberation. Cleavage of IGFBP-5 is comparatively IGF-independent and is modestly inhibited by IGF. A closely related paralogue, PAPPA2 (Pappalysin-2), cleaves IGFBP-3 and IGFBP-5 with a distinct IGF-dependency profile, illustrating subfunctionalization within the pappalysin family.

Disease Relevance

Low first-trimester serum PAPPA is an established risk marker for Down syndrome, intrauterine growth restriction, preeclampsia, and adverse obstetric outcomes, forming a core component of combined prenatal screening algorithms. Beyond obstetrics, elevated PAPPA is detected in unstable coronary artery disease and acute myocardial infarction, where local IGF-1 mobilization in atherosclerotic plaque is thought to contribute to plaque instability. PAPPA overexpression has been documented in several cancers, including breast, ovarian, and lung carcinoma, where it may promote tumor growth by amplifying IGF receptor signaling. Conversely, germline PAPPA deficiency produces proportionate dwarfism in mice, underscoring its non-redundant role in skeletal and somatic growth.

Research Utility

Detection of PAPPA protein by Western blot, immunohistochemistry, and immunofluorescence addresses diverse experimental needs: quantifying protease expression in placental or tumor tissue sections, monitoring proprotein versus mature forms, and characterizing PAPPA localization relative to IGF-pathway components. Because PAPPA is a large, multi-domain secreted protein, antibodies targeting distinct structural regions — propeptide, catalytic domain, LamGL module, or C-terminal segments — provide complementary tools for epitope accessibility studies and for discriminating full-length zymogen from processed isoforms under denaturing or native conditions.

Gene & Protein Reference

Gene Symbol	PAPPA
HGNC	HGNC:8602
NCBI Gene ID (Human)	5069
NCBI Gene ID (Mouse)	18491
Ensembl	ENSG00000182093
OMIM	176385
UniProt (Human)	Q13219
UniProt (Mouse)	O88592
Protein Family	Metzincin superfamily; Pappalysin subfamily (M43 family)
Predicted MW	~180 kDa (monomer); circulates as a ~500 kDa disulfide-linked homodimer
Observed MW	~400–500 kDa under non-reducing conditions; ~180–200 kDa under reducing SDS-PAGE
Chromosome	9q33.1
Paralogue	PAPPA2 (Pappalysin-2; ENSG00000197549)
Key Substrates	IGFBP-4 (IGF-dependent); IGFBP-5 (partially IGF-independent)
Activated by	Autocatalytic propeptide removal; released from proMBP inhibitory complex
Inhibited by	Pregnancy-associated plasma protein-A binding partner proMBP (RNASE3/MBP); heparin at high concentrations

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.