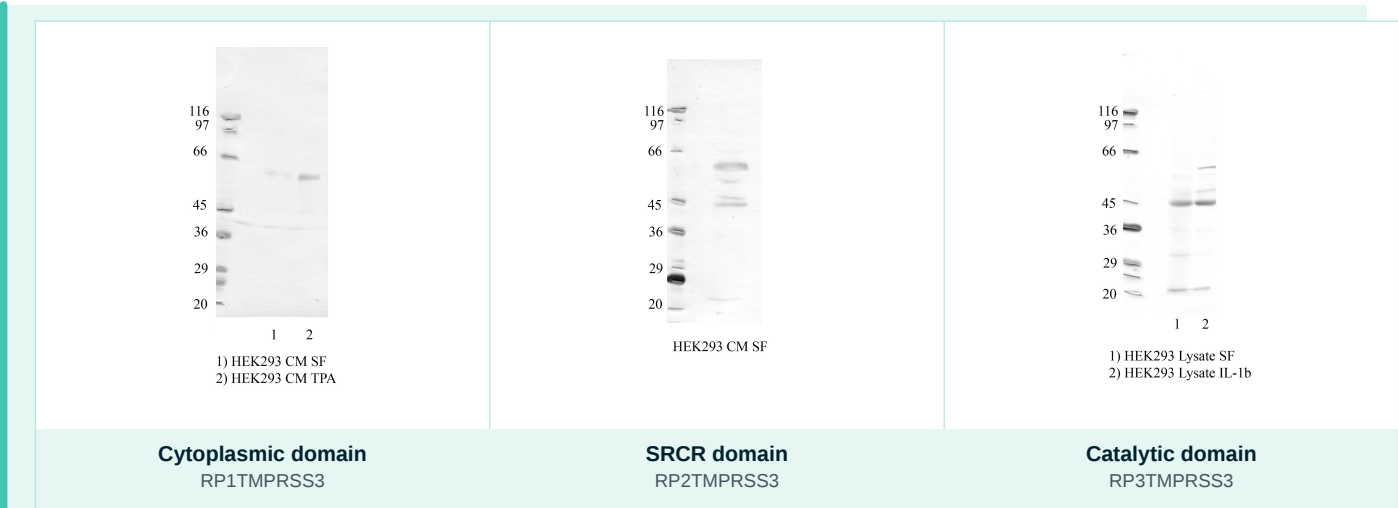


Anti-TMPRSS3 Rabbit Polyclonal Antibody

Transmembrane protease serine 3 EC 3.4.21.-, Serine protease TADG-12, Tumor-associated differentially-expressed gene 12 protein,

Gene: TMPRSS3 **UniProt:** P57727 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



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

Actual Western blot validation for anti-TMPRSS3 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-TMPRSS3 Rabbit Polyclonal Antibody
Gene Symbol	TMPRSS3
Alternative Names	Transmembrane protease serine 3 EC 3.4.21.-, Serine protease TADG-12, Tumor-associated differentially-expressed gene 12 protein,
UniProt ID	P57727
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, Pan, Monkey, Dog
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-tmprss-3-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of TMPRSS3. 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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Cytoplasmic domain	1–48 Region within the short N-terminal cytoplasmic tail of human TMPRSS3, upstream of the single transmembrane segment; this intracellular portion is distinct from the extracellular SRCR and catalytic domains and is accessible in membrane-permeabilized or denatured sample preparations	RP1TMPRSS3	In catalog
SRCR domain	109–205 Region within the scavenger receptor cysteine-rich (SRCR) domain of human TMPRSS3, located in the extracellular stem region between the transmembrane anchor and the serine protease catalytic domain; this domain is a conserved structural module implicated in protein–protein interactions at the cell surface	RP2TMPRSS3	In catalog
Catalytic domain	217–449 Region within the C-terminal trypsin-like serine protease catalytic domain of human TMPRSS3, which harbors the conserved His-Asp-Ser catalytic triad and is responsible for substrate recognition and proteolytic cleavage of targets including the ENaC subunits	RP3TMPRSS3	In catalog
—	1–454 Broad coverage spanning multiple domains of human TMPRSS3, including the cytoplasmic tail, transmembrane segment, extracellular SRCR domain, and trypsin-like catalytic domain; suitable for general detection applications where domain-specific selectivity is not required	RP-TMPRSS3	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated- Human Potenti- al-Mouse, Rat, Pan, Monkey, Dog	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

TMPRSS3 (Transmembrane Protease Serine 3) is a type II transmembrane serine protease belonging to the TMPRSS subfamily of the clan PA, family S1 serine proteases. Like other TMPRSS family members—including TMPRSS2, TMPRSS4, and hepsin—TMPRSS3 adopts a modular extracellular architecture comprising a scavenger receptor cysteine-rich (SRCR) domain and a C-terminal trypsin-like catalytic domain, anchored to the plasma membrane by a single transmembrane segment with a short N-terminal cytoplasmic tail. The catalytic domain contains the conserved His, Asp, Ser catalytic triad characteristic of serine proteases and exhibits trypsin-like substrate specificity, cleaving after basic residues.

Expression & Localization

TMPRSS3 expression is highly enriched in the inner ear, where it is detected in the cochlea and saccule, with lower-level expression documented in the pancreas, stomach, colon, and thymus. Within the cochlea, TMPRSS3 is expressed in multiple cell populations, including hair cells and supporting cells of the organ of Corti, as well as spiral ganglion neurons and selected cell types of the lateral wall. At the subcellular level, TMPRSS3 localizes predominantly to the plasma membrane and, under some conditions, to the endoplasmic reticulum membrane. This restricted tissue expression pattern is consistent with its specialized role in inner ear physiology.

Activation Mechanism & Substrates

TMPRSS3 functions as an active serine protease at the cell surface, where it can undergo autoactivation through cleavage of its own pro-domain, a mechanism shared with several TMPRSS family members. A well-characterized substrate is the epithelial sodium channel (ENaC); TMPRSS3 proteolytically activates ENaC subunits, stimulating amiloride-sensitive sodium current and thereby contributing to ion homeostasis in epithelial tissues including the inner ear endolymphatic compartment. TMPRSS3 has also been reported to activate hepatocyte growth factor (HGF) and, in cell-based assays, to support cleavage of viral envelope proteins, though its primary physiological substrates are considered to be ENaC and related channel-associated proteins.

Role in Cochlear Hair Cell Survival

Genetic and functional studies consistently demonstrate that TMPRSS3 is required for the survival and functional maturation of cochlear and saccular hair cells, particularly at and after the onset of hearing. Loss of TMPRSS3 activity leads to progressive degeneration of inner and outer hair cells, with the outer hair cells of the basal turn being especially vulnerable. The protease is thought to support hair cell maintenance through local proteolytic remodeling of the extracellular environment and regulation of ion channel activity. Mouse models carrying *Tmprss3* loss-of-function mutations replicate the human deafness phenotype, validating the gene's indispensable role in auditory function.

Disease Relevance

Mutations in TMPRSS3 cause autosomal recessive nonsyndromic sensorineural hearing loss mapped to loci DFNB8 and DFNB10. Both prelingual (DFNB10) and postlingual (DFNB8) forms are associated with distinct mutation classes, with missense and truncating variants distributed across multiple exons. TMPRSS3 is therefore a diagnostically relevant gene in the genetic workup of congenital and childhood-onset deafness. Beyond auditory disease, aberrant TMPRSS3 expression has been reported in several epithelial cancers, including ovarian and pancreatic carcinoma, where it has been designated a

tumor-associated differentially expressed gene (TADG-12), though its mechanistic contribution to malignancy remains under investigation.

Inhibitor Profile

As a serine protease of the S1 family, TMPRSS3 is susceptible to broad-spectrum serine protease inhibitors including aprotinin and the synthetic compounds camostat and nafamostat, which block its activity at low micromolar concentrations in cell-based assays. Endogenous regulation may involve members of the Kunitz-type and Kazal-type serine protease inhibitor families, though specific endogenous inhibitors of TMPRSS3 have not been unambiguously identified in vivo. Hepatocyte growth factor activator inhibitor type 1 (HAI-1, encoded by SPINT1) has been shown to inhibit related TMPRSS family members and may play a regulatory role, but direct evidence for HAI-1 as a physiological TMPRSS3 inhibitor is limited.

Gene & Protein Reference

Gene Symbol	TMPRSS3
HGNC	HGNC:11878
NCBI Gene ID (Human)	64699
NCBI Gene ID (Mouse)	50528
Ensembl	ENSG00000160183
OMIM	605511
UniProt (Human)	P57727
UniProt (Mouse)	Q9WU27
Protein Family	Clan PA, family S1 serine protease; TMPRSS (type II transmembrane serine protease) subfamily
Predicted MW	~54 kDa (454 amino acids; UniProt P57727)
Observed MW	~50–60 kDa (variable by glycosylation state and processing)
Chromosome	21q22.3
Paralogue	TMPRSS2, TMPRSS4, TMPRSS5 (hepsin), TMPRSS6
Key Substrates	ENaC (epithelial sodium channel α , β , γ subunits), hepatocyte growth factor (HGF)
Activated by	Autoactivation via pro-domain cleavage; possibly transactivation by co-expressed transmembrane serine proteases
Inhibited by	Aprotinin, camostat mesylate, nafamostat mesylate; potentially HAI-1 (SPINT1)

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.