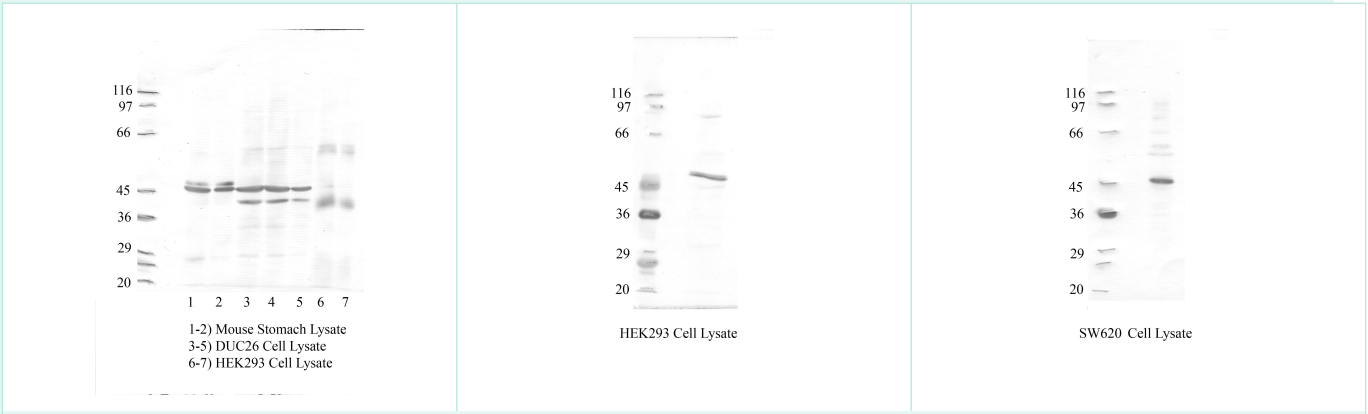
Anti-TMPRSS2 Rabbit Polyclonal Antibody

Transmembrane protease serine 2 EC 3.4.21.122, Serine protease 10, [Cleaved into: Transmembrane protease serine 2 non-catalytic chain; Transmembrane protease serine 2 catalytic chain

Gene: TMPRSS2 **UniProt:** O15393 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



Cytoplasmic domain	**SRCR domain**	**Catalytic domain**
RP1TMPRSS2	RP2TMPRSS2	RP3TMPRSS2

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

Actual Western blot validation for anti-TMPRSS2 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-TMPRSS2 Rabbit Polyclonal Antibody
Gene Symbol	TMPRSS2
Alternative Names	Transmembrane protease serine 2 EC 3.4.21.122, Serine protease 10, [Cleaved into: Transmembrane protease serine 2 non-catalytic chain; Transmembrane protease serine 2 catalytic chain
UniProt ID	O15393
Host Species	Rabbit
Clonality	Polyclonal (pAb)
Isotype	IgG
Concentration	1mg/ml
Purity	Affinity purified
Pack Size	100ug
Validated Application	WB, IF
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-tmprss-2-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of TMPRSS2. 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

Cytoplasmic domain	**~1–84** Region spanning the short intracellular N-terminal cytoplasmic tail of human TMPRSS2, upstream of the single-pass transmembrane helix, representing the cytosolic portion of this type II transmembrane protease	RP1TMPRSS2	In catalog
SRCR domain	**~149–242** Region within the scavenger receptor cysteine-rich (SRCR) domain of human TMPRSS2, located extracellularly between the LDLRA module and the trypsin-like serine protease domain, and contributing to protein–protein interactions at the cell surface	RP2TMPRSS2	In catalog
Catalytic domain	**~255–492** Region within the C-terminal trypsin-like serine peptidase (catalytic) domain of human TMPRSS2, encompassing the segment that carries the catalytic triad residues (His296, Asp345, Ser441) and is released as the catalytic chain upon autocatalytic activation	RP3TMPRSS2	In catalog
—	**1–255** Broad extracellular region of human TMPRSS2 spanning from the juxtamembrane segment through the LDLRA, SRCR, and trypsin-like catalytic domains, suitable for detection of multiple TMPRSS2 isoforms and processed chains	RP-TMPRSS2	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

Family & General Biology

TMPRSS2 (transmembrane protease, serine 2; EC 3.4.21.122; UniProt O15393) is a 492-residue type II transmembrane serine protease belonging to the type II transmembrane serine protease (TTSP) family. Its domain architecture, reading from the N-terminus, comprises a short cytoplasmic tail, a single-pass transmembrane anchor, a low-density lipoprotein receptor class A (LDLRA) module, a scavenger receptor cysteine-rich (SRCR) domain, and a C-terminal trypsin-like catalytic domain. This organisation is characteristic of the TTSP subfamily that includes hepsin, TMPRSS3, TMPRSS4, and matriptase, all of which are anchored at the plasma membrane with their catalytic domains facing the extracellular space.

Expression & Regulation

TMPRSS2 expression is highest in prostate luminal epithelial cells, where transcription is driven by androgen receptor (AR) signalling through canonical androgen-response elements in the gene promoter. Expression is also detected across respiratory epithelium (bronchial and type II pneumocytes), intestinal and colonic epithelium, kidney, liver, and salivary gland. Androgen deprivation markedly reduces prostatic TMPRSS2 transcript levels, consistent with its classification as an androgen-regulated gene. In non-prostatic tissues, expression is more modest but functionally significant, particularly in airway epithelia where the protein is present at the apical surface of ciliated and secretory cells.

Activation & Autocatalytic Processing

TMPRSS2 undergoes autocatalytic activation by intramolecular cleavage at a conserved Arg-Val bond within the activation loop of the catalytic domain, a mechanism shared across the TTSP family. Cleavage generates a non-catalytic N-terminal chain that remains membrane-tethered and a catalytic C-terminal chain; the two chains associate at the cell surface via a disulfide bond. The resulting active serine protease has trypsin-like specificity, preferentially cleaving peptide bonds C-terminal to arginine residues. Zymogen processing can also be facilitated in trans by other membrane-anchored proteases, adding a paracrine dimension to its activation at the epithelial surface.

Key Substrates & Proteolytic Cascades

Confirmed physiological substrates of TMPRSS2 include pro-hepatocyte growth factor (pro-HGF), protease-activated receptor 2 (PAR-2/F2RL1), and matriptase (ST14), situating TMPRSS2 within multi-step proteolytic cascades that regulate epithelial proliferation, migration, and barrier function. In respiratory epithelium, TMPRSS2 cleaves and activates the haemagglutinin of influenza A viruses and the spike (S) proteins of several coronaviruses, including SARS-CoV, MERS-CoV, and SARS-CoV-2, enabling viral–cell membrane fusion. This priming activity is independent of endosomal cathepsins and represents a distinct, cell-surface entry pathway exploited by these respiratory pathogens.

Disease Relevance

In prostate cancer, the TMPRSS2:ERG gene fusion — arising from a chromosomal deletion on 21q22 that juxtaposes TMPRSS2 regulatory sequences with the ETS transcription factor ERG — is detected in approximately 40–50% of prostate adenocarcinomas and is one of the most frequent recurrent gene fusions in human epithelial cancer. Androgen-driven overexpression of TMPRSS2 in prostate cancer is associated with tumour invasion and metastatic potential. In infectious disease, cell-surface TMPRSS2 activity is a critical host determinant of SARS-CoV-2 tropism and pathogenicity, making it a validated drug target; camostat mesylate and nafamostat, serine protease inhibitors with activity against TMPRSS2, have been evaluated clinically as antiviral agents.

Inhibitor Profile

TMPRSS2 is inhibited by broad-spectrum serine protease inhibitors including aprotinin, leupeptin, and benzamidine. More selective inhibitors include the synthetic compounds camostat mesylate and nafamostat, both of which form acyl-enzyme intermediates with the active-site serine (Ser441). Natural endogenous inhibitors include HAI-1 (SPINT1) and HAI-2 (SPINT2), Kunitz-type inhibitors that regulate multiple TTSPs at the epithelial surface. No endogenous inhibitor has been demonstrated to be strictly specific for TMPRSS2 in vivo; inhibitor selectivity within the TTSP family remains an active area of investigation.

Gene & Protein Reference

Gene Symbol	TMPRSS2
HGNC	11876
NCBI Gene ID (Human)	7113
NCBI Gene ID (Mouse)	50528
Ensembl	ENSG00000184012
OMIM	602060
UniProt (Human)	O15393
UniProt (Mouse)	Q9WU08
Protein Family	Type II transmembrane serine protease (TTSP) family
Predicted MW	~54 kDa (unprocessed); catalytic chain ~30 kDa; non-catalytic chain ~25 kDa
Observed MW	~70–90 kDa (full-length, glycosylated) by SDS-PAGE
Chromosome	21q22.3
Paralogue	TMPRSS3, TMPRSS4, Hepsin (TMPRSS1), TMPRSS6
Key Substrates	Pro-HGF, PAR-2/F2RL1, Matriptase/ST14, Influenza haemagglutinin, SARS-CoV-2 spike protein (S)
Activated by	Autocatalytic cleavage; androgen receptor signalling (transcriptional); possible trans-activation by other TTSPs
Inhibited by	Camostat mesylate, Nafamostat, Aprotinin, Leupeptin, Benzamidine, HAI-1 (SPINT1), HAI-2 (SPINT2)

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