Anti-CAPN7 Rabbit Polyclonal Antibody

Calpain-7, EC 3.4.22.-, PalB homolog, PalBH,

Gene: CAPN7 **UniProt:** Q9Y6W3 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image

Image placeholder — Western Blot

— Western Blot

Suggested image: Western blot of relevant cell or tissue lysates under reducing conditions, probed with the domain-specific antibody. Include a positive-control lane and empty-vector or knockout negative control. Loading: 10–20 µg/lane on 7.5–10% SDS-PAGE.

Key Product Facts

Supplier	Triple Point Biologics, Inc. (Sudbury, Ontario, Canada)
Product Name	Anti-CAPN7 Rabbit Polyclonal Antibody
Gene Symbol	CAPN7
Alternative Names	Calpain-7, EC 3.4.22.-, PalB homolog, PalBH,
UniProt ID	Q9Y6W3
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, 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-calpain-7-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CAPN7. 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

Carboxyterminal end Domain-I	**763–813** Region spanning the carboxyterminal portion of Domain-I (the first lobe of the papain-like protease core), immediately adjacent to the interdomain interface with Domain-II, within the catalytic cysteine protease fold of human CAPN7	RP1Calpain7	In catalog
Carboxyterminal end Domain-N	**763–813** Region within the carboxyterminal segment of the N-terminal domain (Domain-N) of human CAPN7, proximal to the boundary with the catalytic Domain-I and distal from the initiator methionine, within a region implicated in autoinhibitory and regulatory interactions	RP2Calpain7	In catalog
Aminoterminal end Domain-I	**1–51** Region encompassing the aminoterminal segment of Domain-I of human CAPN7, at the junction with Domain-N and forming part of the entry into the papain-like protease core fold that houses the catalytic cysteine residue	RP3Calpain7	In catalog
Carboxyterminal end Domain-III	**763–813** Region within the carboxyterminal portion of Domain-III of human CAPN7, located upstream of the tandem MIT domains and forming part of the C-terminal regulatory module that is structurally distinct from the classical calmodulin-like domain found in conventional calpains	RP4Calpain7	In catalog
—	**1–813** Broad epitope coverage spanning multiple domains of human CAPN7 — from the aminoterminal portion of Domain-I through Domain-II and into Domain-III — providing reactivity against the core protease and regulatory domains of the full-length protein	RP-Calpain7	In catalog

Applications & Recommended Dilutions

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

General Biology & Family

Calpain-7 (CAPN7; also designated PalBH, nCL-2, and stomach-specific M-type calpain) is a calcium-regulated, non-lysosomal cysteine protease belonging to the calpain superfamily (clan CA, family C02). The superfamily is defined by a conserved catalytic triad within the protease core and sensitivity to the endogenous inhibitor calpastatin. CAPN7 is classified as an atypical or 'solitary' calpain: it lacks the small regulatory subunit (CAPNS1/CAPNS2) that partners with classical calpains-1 and -2, and its domain architecture diverges markedly from conventional family members, reflecting distinct regulatory and substrate-recognition strategies.

Domain Architecture

The 813-amino-acid CAPN7 polypeptide is organized into an N-terminal domain (Domain-N), a cysteine protease core divided into two subdomains (Domain-I and Domain-II forming the catalytic papain-like fold), and a C-terminal Domain-III. Notably, CAPN7 lacks the calmodulin-like Domain-IV present in classical calpains, instead carrying two tandem microtubule-interacting and transport (MIT) domains at or near its C-terminus. These MIT domains mediate protein–protein interactions critical for CAPN7's cellular functions, distinguishing it structurally from the mu- and m-calpain isoforms.

Expression & Localisation

CAPN7 is expressed in a tissue-restricted pattern, with highest transcript and protein levels detected in stomach (gastric mucosa), consistent with its historical designation as stomach-specific M-type calpain. Lower but detectable expression is reported in uterus, brain, and several epithelial tissues. At the subcellular level, CAPN7 localizes predominantly to the nucleus under steady-state conditions, an unusual compartmentalization for a calpain family member that contrasts with the predominantly cytosolic distribution of classical calpains and points to specialized nuclear substrates.

Activation Mechanism & ESCRT Cooperation

Like other calpains, CAPN7 activity is regulated by calcium, though its precise calcium sensitivity thresholds are not fully characterized. CAPN7 is recruited to the midbody during the terminal stage of cell division (cytokinetic abscission) through direct interaction of its MIT domains with the ESCRT-III component IST1. At the midbody, CAPN7 cooperates with the ESCRT-III machinery to regulate the timing and fidelity of abscission — the physical membrane scission step that completes cell division. Disruption of the CAPN7–IST1 interaction delays abscission and promotes genomic instability, establishing CAPN7 as a mechanistically important component of the late cytokinetic machinery.

Key Substrates & Signalling Roles

Beyond its role in cytokinesis, CAPN7 participates in endometrial stromal cell decidualization. In this context, CAPN7 has been reported to hydrolyze AKT1, leading to reduced AKT1-mediated phosphorylation of the transcription factor FoxO1 and consequent nuclear accumulation of FoxO1 — a signalling outcome required for appropriate decidual differentiation. This substrate relationship places CAPN7 within the PI3K/AKT signalling axis and suggests it can modulate transcription factor availability through limited proteolysis of upstream kinases, a mode of regulation distinct from classical calpain substrates such

as cytoskeletal proteins.

Disease Relevance

CAPN7 expression is dysregulated in several pathological contexts. In bladder cancer, CAPN7 levels are regulated post-transcriptionally via a long non-coding RNA/microRNA axis (TUG1/miR-29c-3p), with altered CAPN7 expression correlating with changes in cancer cell migration and invasion. Aberrant CAPN7 activity or expression has also been linked to defective cytokinetic abscission, which can contribute to aneuploidy and chromosomal instability — hallmarks of tumour progression. Additionally, perturbation of CAPN7 function in endometrial tissue may impair decidualization, with potential implications for implantation failure and early pregnancy loss.

Gene & Protein Reference

Gene Symbol	CAPN7
HGNC	HGNC:1481
NCBI Gene ID (Human)	823
NCBI Gene ID (Mouse)	67567
Ensembl	ENSG00000083807
OMIM	605992
UniProt (Human)	Q9Y6W3
UniProt (Mouse)	Q9WU60
Protein Family	Calpain superfamily (clan CA, family C02); atypical/solitary calpain subgroup
Predicted MW	~94 kDa (813 aa)
Observed MW	~94–100 kDa (SDS-PAGE; may vary by tissue and post-translational modification)
Chromosome	3p24.2 (human)
Paralogue	CAPN8 (most closely related atypical calpain; both carry tandem MIT domains)
Key Substrates	AKT1 (reported in endometrial decidualization context); IST1 (interaction partner at midbody); additional nuclear substrates under investigation
Activated by	Calcium ions (precise Ca^{2}■ sensitivity thresholds not fully established); MIT-domain-mediated recruitment to ESCRT-III complexes
Inhibited by	Calpastatin (endogenous calpain inhibitor); broad-spectrum calpain inhibitors (e.g., ALLM, ALLN, MDL-28170); E-64 (cysteine 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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