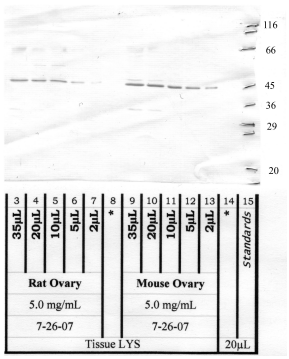
Anti-ASTL Rabbit Polyclonal Antibody

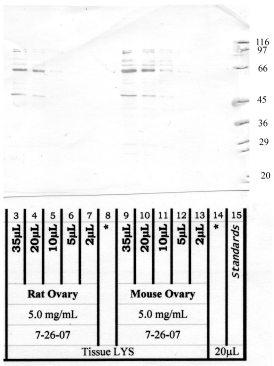
Astacin-like metalloendopeptidase, EC 3.4.-.-, Oocyte astacin, Ovastacin, ZP2-proteinase,

Gene: ASTL **UniProt:** Q6HA08 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

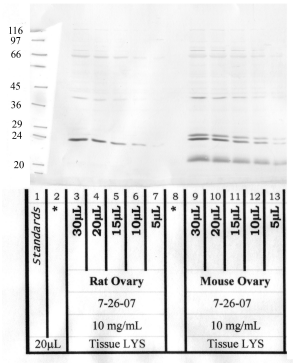
Product Image



Propeptide domain
RP1Ovastacin



Catalytic domain
RP2Ovastacin



Carboxy end Catalytic domain
RP3Ovastacin

— Western Blot (4-panel validation across domain-specific antibody clones)

Actual Western blot validation for anti-ASTL rabbit polyclonal antibody. 4-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-ASTL Rabbit Polyclonal Antibody
Gene Symbol	ASTL
Alternative Names	Astacin-like metalloendopeptidase, EC 3.4.-.-, Oocyte astacin, Ovastacin, ZP2-proteinase,
UniProt ID	Q6HA08
Host Species	Rabbit
Clonality	Polyclonal (pAb)
Isotype	IgG
Concentration	1mg/ml
Purity	Affinity purified
Pack Size	100ug
Validated Application	IP, WB, IHC
Recommended Dilution	WB-1/1000
Species Reactivity	Validated- Human Potential-Mouse, Rat, Pan, 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-ovastacin-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of ASTL. 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
Propeptide Domain	**24–63** Region within the N-terminal propeptide of human ovastacin, which occludes the active-site cleft in the zymogen form via a cysteine-switch mechanism and is removed upon activation in the perivitelline space	RP1Ovastacin	In catalog

Catalytic Domain	**85–282** Region spanning the core catalytic domain of human ovastacin, encompassing the conserved HEXXHXXGXXH zinc-binding motif and the Met-turn characteristic of astacin-family metalloendopeptidases, upstream of the C-terminal region	RP2Ovastacin	In catalog
Carboxy end Catalytic Domain	**242–282** Region at the C-terminal portion of the catalytic domain of human ovastacin, transitioning toward the C-terminal subdomain, retaining proximity to the zinc-coordinating residues and substrate-binding groove	RP3Ovastacin	In catalog
Carboxyterminal end	**381–431** Region within the C-terminal end of human ovastacin, downstream of the catalytic domain, constituting the distal portion of the protein and potentially involved in structural stabilisation of the folded enzyme	RP4Ovastacin	In catalog
—	**24–431** Broad multi-domain region spanning the full-length human ovastacin precursor, encompassing the propeptide, catalytic domain, and C-terminal region; suitable for detection of both zymogen and processed forms of the protein	RP-Ovastacin	In catalog

Applications & Recommended Dilutions

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

Ovastacin (gene symbol ASTL; also designated oocyte astacin or ZP2-proteinase) is a zinc-dependent metalloendopeptidase belonging to the astacin subfamily of the metzincin superfamily. Like other astacins, it contains the conserved HEXXHXXGXXH zinc-binding motif and a Met-turn that anchors the catalytic zinc ion. Structurally, astacins share a characteristic N-terminal prodomain, a central catalytic domain housing the zinc-binding site, and a C-terminal region. Ovastacin is among the most functionally specialized members of the astacin family, dedicated almost exclusively to a single proteolytic event in the context of mammalian fertilization.

Expression & Localisation

ASTL expression is among the most restricted of any proteinase, confined essentially to the female germ line. Transcript and protein are detectable in growing oocytes and are maintained through meiotic maturation. Prior to fertilization, ovastacin protein accumulates within cortical granules—membrane-bound secretory vesicles arrayed beneath the oocyte plasma membrane. This compartmentalization keeps the active enzyme physically separated from zona pellucida substrates until the moment of fertilization triggers cortical granule exocytosis and release of ovastacin into the perivitelline space.

Activation Mechanism

Ovastacin is synthesized as an inactive zymogen bearing an N-terminal propeptide that occludes the active-site cleft via a conserved cysteine-switch mechanism analogous to that described for matrix metalloproteinases and other astacins. Proteolytic removal of the prodomain is required for activity. Upon cortical granule exocytosis following sperm-egg fusion, the released zymogen undergoes activation in the perivitelline space. The precise endogenous activating proteinase(s) in the human system remain incompletely defined, though autocatalytic processing and co-released cortical granule proteases have been implicated in related species.

Key Substrates & Function

The primary physiologically validated substrate of ovastacin is ZP2, one of the three major glycoproteins (ZP1, ZP2, ZP3) that constitute the zona pellucida. Ovastacin cleaves ZP2 at a defined site within its N-terminal ectodomain, converting intact ZP2 to a truncated form that no longer supports sperm binding. This modification hardens the zona pellucida and constitutes the definitive slow block to polyspermy—a permanent structural change that prevents supernumerary sperm from penetrating the zona and reaching the egg plasma membrane. The reaction occurs within minutes of fertilization and is essentially irreversible under physiological conditions.

Inhibitor Profile

Fetuin-B, a serum-derived cystatin-like glycoprotein, has been identified as a potent endogenous inhibitor of ovastacin. Fetuin-B circulates in blood and is present in follicular fluid, where it prevents premature ZP2 cleavage before fertilization. Genetic ablation of fetuin-B in mice results in premature zona hardening and consequent infertility, mirroring the phenotype of ovastacin gain-of-function. This fetuin-B/ovastacin axis represents a physiologically critical regulatory checkpoint that coordinates the timing of zona modification with the fertilization event. Classical broad-spectrum metalloproteinase inhibitors such as EDTA and 1,10-phenanthroline also inhibit ovastacin in vitro.

Disease Relevance

Loss-of-function variants in ASTL have been identified in women presenting with primary infertility characterised by failed or abnormal fertilization. In affected individuals, failure to cleave ZP2 after sperm entry compromises the polyspermy block, potentially allowing entry of multiple sperm and subsequent developmental arrest. Conversely, premature ovastacin activity—before fertilization—would result in zona hardening that prevents sperm penetration. The ASTL–fetuin-B regulatory

axis is therefore a candidate target for both contraceptive intervention and therapeutic strategies aimed at improving fertilization outcomes in assisted reproductive technology.

Gene & Protein Reference

Gene Symbol	ASTL
HGNC	HGNC:33481
NCBI Gene ID (Human)	128153
NCBI Gene ID (Mouse)	76901
Ensembl	ENSG00000197381
OMIM	614513
UniProt (Human)	Q6HA08
UniProt (Mouse)	Q6HA08
Protein Family	Astacin family; Metzincin superfamily (zinc-dependent metalloendopeptidases)
Predicted MW	~47 kDa (full-length precursor, 431 aa)
Observed MW	~47–50 kDa (zymogen); processed forms ~35–40 kDa reported
Chromosome	2p23.1 (human)
Paralogue	BMP1, TLL1, TLL2, PAPP-A (astacin/metzincin superfamily members); closest structural paralogues within astacin subfamily include PRSS (meprin) family members
Key Substrates	ZP2 (zona pellucida glycoprotein 2) — cleavage of N-terminal ectodomain; additional extracellular matrix substrates proposed but not well validated in vivo
Activated by	Prodomain removal by endogenous protease(s) in the perivitelline space following cortical granule exocytosis; autocatalytic processing implicated
Inhibited by	Fetuin-B (FETUB; endogenous physiological inhibitor); EDTA, 1,10-phenanthroline (chelation-based in vitro inhibitors)

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

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES.
Product specifications subject to change. Contact Triple Point Biologics for current product and availability information.