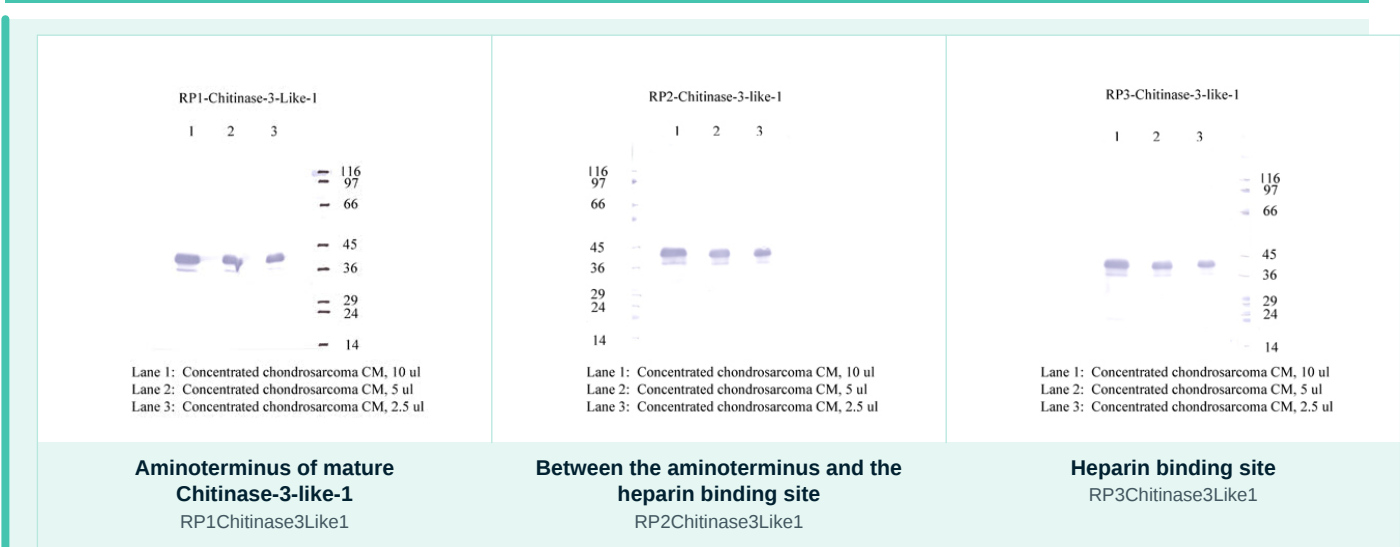


Anti-CHI3L1 Rabbit Polyclonal Antibody

Chitinase-3-like protein 1 39 kDa synovial protein, Cartilage glycoprotein 39, CGP-39, GP-39, hCGP-39, YKL-40,

Gene: CHI3L1 **UniProt:** P36222 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image



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

Actual Western blot validation for anti-CHI3L1 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-CHI3L1 Rabbit Polyclonal Antibody
Gene Symbol	CHI3L1
Alternative Names	Chitinase-3-like protein 1 39 kDa synovial protein, Cartilage glycoprotein 39, CGP-39, GP-39, hCGP-39, YKL-40,
UniProt ID	P36222
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-
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-chitinase-3-like-1-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CHI3L1. 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
------------------	-----------------------------------	----------	--------------

Aminotermminus of mature Chitinase-3-like-1	~22–70 Region spanning the N-terminal segment of the mature secreted protein (following signal peptide cleavage at ~residue 21), within the N-terminal lobe of the glycosyl hydrolase 18 TIM-barrel domain, upstream of the central chitin-binding groove	RP1Chitinase3 Like1	In catalog
Between the aminotermminus and the heparin binding site	22–72 Region within the central portion of the TIM-barrel catalytic domain of CHI3L1, situated between the N-terminal lobe and the positively charged heparin-binding cluster, encompassing beta-strand and loop elements that contribute to the carbohydrate-binding cleft	RP2Chitinase3 Like1	In catalog
Heparin binding site	~171–230 Region encompassing the heparin-binding site of CHI3L1, characterised by a cluster of basic residues on the surface of the TIM-barrel domain that mediate interaction with heparan sulfate proteoglycans and heparin, facilitating extracellular matrix retention and syndecan-1/CD44 co-receptor engagement	RP3Chitinase3 Like1	In catalog
Area between the heparin binding site and carboxyterminus.	333–383 Region spanning the C-terminal portion of the TIM-barrel domain and the beginning of the small C-terminal alpha+beta domain of CHI3L1, downstream of the heparin-binding cluster and upstream of the terminal structural elements that close the barrel fold	RP4Chitinase3 Like1	In catalog
Carboxyterminus of human chitinase-3-like-1	~331–383 Region comprising the C-terminal alpha+beta subdomain of CHI3L1, which packs against the TIM-barrel and contributes to the overall structural integrity of the protein; this region is distal from the chitin-binding groove and the heparin-binding surface	RP5Chitinase3 Like1	In catalog
—	22–383 Broad epitope coverage spanning the full-length mature CHI3L1 protein, encompassing both the TIM-barrel glycosyl hydrolase 18 catalytic domain and the C-terminal alpha+beta subdomain; suitable for detection applications where domain-specific epitope restriction is not required	RP-Chitinase3L ike1	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
------	---------	----------------	-------

WB	Validated-Human Potential-	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

Chitinase-3-like protein 1 (CHI3L1, UniProt P36222), designated YKL-40 after its three N-terminal residues (tyrosine, lysine, leucine) and its molecular weight, belongs to the glycosyl hydrolase family 18. Despite strong structural conservation with catalytically active chitinases, CHI3L1 carries substitutions at key active-site residues that abolish enzymatic hydrolysis of chitin. It instead functions as a carbohydrate-binding lectin, retaining affinity for chitin oligomers and heparin. The mature secreted protein is 383 amino acids, with a single N-glycosylation site contributing to an observed molecular weight of approximately 40 kDa on reducing SDS-PAGE.

Expression & Localisation

CHI3L1 is expressed predominantly by chondrocytes, synoviocytes, hepatic stellate cells, vascular smooth muscle cells, neutrophils, and macrophages. Elevated transcript and protein levels are consistently detected in activated macrophages of the M2 polarisation state. In the central nervous system, astrocytes are the primary source, and secreted CHI3L1 accumulates in cerebrospinal fluid under neuroinflammatory conditions. The protein is exported through the classical secretory pathway and accumulates in the extracellular matrix, where it associates with heparan sulfate proteoglycans. Serum YKL-40 is measurable by ELISA and rises sharply during acute inflammatory episodes.

Receptor Interactions & Signalling

CHI3L1 exerts its extracellular functions through interactions with multiple cell-surface receptors. Binding to the IL-13 receptor $\alpha 2$ (IL-13R $\alpha 2$) in concert with IL-13 activates downstream MAPK and AP-1 cascades, driving Th2-skewed inflammation, allergen sensitisation, and M2 macrophage differentiation. CHI3L1 also engages syndecan-1 and CD44 in a heparin-dependent manner, triggering AKT1 phosphorylation in epithelial cells. In colonic mucosa, this AKT1 activation promotes IL-8 secretion and facilitates bacterial translocation across the epithelial barrier. Galectin-3 has been reported as an additional binding partner that modulates CHI3L1's pro-survival signalling in tumour microenvironments.

Role in Inflammation & Tissue Remodelling

CHI3L1 is a well-established mediator of chronic inflammatory tissue remodelling. It promotes fibroblast and smooth muscle cell proliferation, inhibits apoptosis, and stimulates production of extracellular matrix components including fibronectin and collagen. In pulmonary biology, CHI3L1 modulates macrophage-mediated bacterial clearance and attenuates hyperoxia-induced epithelial cell apoptosis. In asthma models, CHI3L1 amplifies IL-13-driven airway hyper-responsiveness and subepithelial fibrosis. Its expression in hepatic stellate cells correlates with progression of liver fibrosis, and serum YKL-40 is used clinically as a surrogate marker for fibrosis stage in chronic liver disease.

Disease Relevance & Biomarker Utility

Elevated serum or plasma YKL-40 is documented across a broad spectrum of diseases, including rheumatoid arthritis, osteoarthritis, inflammatory bowel disease, asthma, COPD, hepatic fibrosis, and several solid tumours. In glioblastoma, CHI3L1 is overexpressed and correlates with poor prognosis, promoting angiogenesis and immune evasion. In Alzheimer's disease and other tauopathies, CSF YKL-40 serves as a glial activation marker that rises early in the disease course, preceding cognitive decline. Single-nucleotide polymorphisms in the CHI3L1 promoter are associated with altered serum YKL-40 levels and asthma susceptibility, supporting a causal rather than purely reactive role for this protein.

Paralogues & Distinguishing Features

The closest human paralogues are CHI3L2 (YKL-39) and CHIT1 (chitotriosidase), both members of the glycosyl hydrolase 18 family. Unlike CHIT1, which retains catalytic activity, CHI3L1 and CHI3L2 are catalytically inactive. CHI3L1 is distinguished from CHI3L2 by its N-glycosylation, broader expression pattern, secretion into serum, and higher affinity for the IL-13Rα2 receptor complex. The mouse orthologue, BRP-39 (breast regression protein 39, UniProt Q9WUC3), shares approximately 90% amino acid identity with human CHI3L1 and recapitulates its roles in Th2 immunity and allergen-driven airway inflammation in rodent models.

Gene & Protein Reference

Gene Symbol	CHI3L1
HGNC	HGNC:1932
NCBI Gene ID (Human)	1116
NCBI Gene ID (Mouse)	12655
Ensembl	ENSG00000133048
OMIM	601525
UniProt (Human)	P36222
UniProt (Mouse)	Q9WUC3
Protein Family	Glycosyl hydrolase family 18 (catalytically inactive chitinase-like lectin)
Predicted MW	42.6 kDa (383 aa, UniProt canonical sequence including signal peptide cleavage)
Observed MW	~40 kDa (reducing SDS-PAGE; N-glycosylation contributes to apparent mass)
Chromosome	1q32.1
Paralogue	CHI3L2 (YKL-39), CHIT1 (chitotriosidase)

Key Substrates	No enzymatic substrates (catalytically inactive); binds chitin oligomers, heparin, and heparan sulfate as ligands
Activated by	IL-13 (via IL-13Rα2 co-receptor complex); TGF-β; hypoxia; NF-κB-activating stimuli; M2 macrophage polarisation signals (IL-4, IL-13)
Inhibited by	No established endogenous protein inhibitor; pharmacological blockade of IL-13Rα2 reduces downstream CHI3L1 signalling

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.