

Anti-CHIA Rabbit Polyclonal Antibody

Acidic mammalian chitinase AMCase, EC 3.2.1.14, Lung-specific protein TSA1902,

Gene: CHIA **UniProt:** Q9BZP6 **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-CHIA Rabbit Polyclonal Antibody
Gene Symbol	CHIA
Alternative Names	Acidic mammalian chitinase AMCase, EC 3.2.1.14, Lung-specific protein TSA1902,
UniProt ID	Q9BZP6
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-acidic-mammalian-chitinase-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CHIA. 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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Aminotermminus of mature AMC	22–72 Region at the immediate amino terminus of the mature AMCase protein, just downstream of the predicted signal peptide cleavage site (~residue 21) and within the opening segment of the catalytic domain, prior to the first conserved GH18 structural elements	RP1Acidic Mammalian Chitinase	In catalog
Amino end of the catalytic domain	22–62 Region spanning the N-terminal portion of the GH18 catalytic (TIM-barrel) domain, encompassing early beta-strands and loops that form part of the substrate-binding cleft, upstream of the conserved DxDxE active-site motif	RP2Acidic Mammalian Chitinase	In catalog
Carboxy end of the catalytic domain	436–476 Region within the C-terminal portion of the GH18 TIM-barrel catalytic domain, downstream of the conserved DxDxE catalytic triad and proximal to the junction with the hinge/linker segment connecting to the chitin-binding domain	RP3Acidic Mammalian Chitinase	In catalog
Hinge region	~390–420 Region within the flexible linker (hinge) of human AMCase, situated between the C-terminus of the GH18 catalytic domain and the N-terminus of the C-terminal chitin-binding domain, a segment predicted to confer interdomain flexibility	RP4Acidic Mammalian Chitinase	In catalog
Chitin binding domain	427–476 Region spanning the C-terminal chitin-binding domain (ChBD) of AMCase, a compact module that mediates non-catalytic attachment to insoluble chitin substrates and contributes to the enzyme's carbohydrate-binding-dependent signalling activities	RP5Acidic Mammalian Chitinase	In catalog
—	22–476 Broad coverage antigen spanning the full-length mature AMCase protein, encompassing the N-terminal catalytic TIM-barrel domain, hinge linker, and C-terminal chitin-binding domain; suitable for applications where domain-specific localisation is not required	RP-Acidic Mammalian Chitinase	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

General Biology and Protein Family

Acidic mammalian chitinase (AMCase; EC 3.2.1.14) is a secreted glycoside hydrolase belonging to the family 18 chitinase group (GH18). It is one of only two catalytically active chitinases encoded in the human genome, the other being chitotriosidase (CHIT1). AMCase hydrolyzes β -1,4-glycosidic bonds in chitin, releasing N-acetylglucosamine oligomers. The 476-amino acid precursor includes a signal peptide, an N-terminal catalytic domain with the conserved DxDxE active-site motif characteristic of GH18 enzymes, a hinge/linker region, and a C-terminal chitin-binding domain (ChBD). The enzyme retains full activity at acidic pH (optimum ~2.0), consistent with its secretion into the gastric lumen and surfactant-rich lung environment.

Expression and Localisation

CHIA mRNA and protein are most abundantly expressed in the stomach and lung, with lower-level expression in the small intestine, liver, and immune cells. In the lung, AMCase localizes predominantly to bronchial and alveolar epithelial cells and was first identified in that context as the lung-specific transcript TSA1902. Gastric chief cells are a major source, consistent with the enzyme's role in digesting dietary and pathogen-derived chitin. In Th2-polarized inflammatory settings, expression is markedly upregulated in airway epithelium and alveolar macrophages, driven largely by IL-13 signaling through STAT6-dependent transcriptional activation.

Activation and Enzymatic Mechanism

AMCase is synthesized as a preproenzyme. The signal peptide directs co-translational translocation into the secretory pathway, after which the mature enzyme is released. No classical zymogen propeptide activation step analogous to metalloproteinase activation is required; the enzyme is constitutively active once correctly folded. Catalysis proceeds via a substrate-assisted mechanism in which the 2-acetamido group of the N-acetylglucosamine substrate acts as the nucleophile, forming an oxazolinium ion intermediate — a mechanism conserved across GH18 chitinases. The acidic pH optimum of AMCase (~2.0) distinguishes it from chitotriosidase (optimum ~pH 5.2) and is consistent with its gastric secretory niche.

Key Substrates and Inhibitor Profile

The primary substrate of AMCase is polymeric chitin, a β -1,4-linked homopolymer of N-acetylglucosamine found in the cell walls of fungi, the exoskeletons of arthropods, and the cuticles of parasitic nematodes. The enzyme efficiently degrades chitotriose and longer oligosaccharides in vitro. AMCase is inhibited by the pseudotrisaccharide allosamidin, a naturally occurring GH18 inhibitor that occupies the active-site cleft and blocks substrate access. Bisdionin C and related synthetic compounds also inhibit AMCase activity. No endogenous mammalian proteinaceous inhibitor analogous to TIMPs (relevant to

metalloproteinases) has been characterised for GH18 chitinases; inhibition is principally by small-molecule active-site competitors.

Non-Enzymatic Signalling Functions

Beyond chitinolysis, AMCase modulates pulmonary epithelial cell biology through receptor-mediated or carbohydrate-binding interactions. In bronchial epithelial cells, AMCase promotes AKT1 phosphorylation, conferring protection against apoptotic stimuli. It also stimulates chemokine production, contributing to the recruitment of eosinophils and other effector cells during Th2 responses. These cytoprotective and pro-inflammatory signalling activities are sensitive to allosamidin, implicating the carbohydrate-binding function of the enzyme — and not a distinct receptor-binding surface — as the structural basis for these non-catalytic effects.

Disease Relevance

AMCase has been implicated in the pathogenesis of allergic asthma, eosinophilic esophagitis, and Th2-driven pulmonary inflammation. IL-13 — a central cytokine in atopic disease — potently induces CHIA expression in airway epithelium, and elevated AMCase protein is detectable in bronchoalveolar lavage fluid from asthmatic subjects. Mouse models of allergen sensitization have demonstrated that AMCase promotes airway hyperresponsiveness and eosinophilia. Genetic variation in CHIA has been associated with susceptibility to asthma and altered chitinase activity in human populations. Conversely, AMCase plays a protective role in the gastrointestinal tract by degrading ingested chitin and contributing to defense against chitin-bearing intestinal pathogens.

Gene & Protein Reference

Gene Symbol	CHIA
HGNC	HGNC:1936
NCBI Gene ID (Human)	27159
NCBI Gene ID (Mouse)	75600
Ensembl	ENSG00000197653
OMIM	606080
UniProt (Human)	Q9BZP6
UniProt (Mouse)	Q9WTT6
Protein Family	Glycoside hydrolase family 18 (GH18) chitinase
Predicted MW	~51 kDa (mature enzyme, after signal peptide cleavage)
Observed MW	~50–60 kDa (variable glycosylation; reported range in Western blot)
Chromosome	1p13.3
Paralogue	Chitotriosidase (CHIT1; GH18; catalytically active) and chitinase-like lectins (CHI3L1/YKL-40, CHI3L2; GH18; catalytically inactive)
Key Substrates	Chitin (β-1,4-poly-N-acetylglucosamine); chitotriose; N-acetylglucosamine oligomers

Activated by	IL-13 (transcriptional upregulation via STAT6); constitutively active enzyme once secreted — no zymogen propeptide cleavage required
Inhibited by	Allosamidin (natural pseudotrisaccharide GH18 inhibitor); bisdionin C and related synthetic GH18 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

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Product specifications subject to change. Contact Triple Point Biologics for current product and availability information.