



href="http://www.uniprot.org/citations/34671164" target="\_blank">34671164</a>, PubMed:<a href="http://www.uniprot.org/citations/37001519" target="\_blank">37001519</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>, PubMed:<a href="http://www.uniprot.org/citations/37993714" target="\_blank">37993714</a>). Also indirectly activates the NLRP3 and NLRP6 inflammasomes (PubMed:<a href="http://www.uniprot.org/citations/23516580" target="\_blank">23516580</a>, PubMed:<a href="http://www.uniprot.org/citations/26375003" target="\_blank">26375003</a>, PubMed:<a href="http://www.uniprot.org/citations/32109412" target="\_blank">32109412</a>, PubMed:<a href="http://www.uniprot.org/citations/7797510" target="\_blank">7797510</a>). Acts as a thiol protease that cleaves a tetrapeptide after an Asp residue at position P1: catalyzes cleavage of CGAS, GSDMD and IL18 (PubMed:<a href="http://www.uniprot.org/citations/15326478" target="\_blank">15326478</a>, PubMed:<a href="http://www.uniprot.org/citations/23516580" target="\_blank">23516580</a>, PubMed:<a href="http://www.uniprot.org/citations/26375003" target="\_blank">26375003</a>, PubMed:<a href="http://www.uniprot.org/citations/28314590" target="\_blank">28314590</a>, PubMed:<a href="http://www.uniprot.org/citations/32109412" target="\_blank">32109412</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>, PubMed:<a href="http://www.uniprot.org/citations/37993714" target="\_blank">37993714</a>, PubMed:<a href="http://www.uniprot.org/citations/7797510" target="\_blank">7797510</a>). Effector of the non-canonical inflammasome independently of NLRP3 inflammasome and CASP1: the non-canonical inflammasome promotes pyroptosis through GSDMD cleavage without involving secretion of cytokine IL1B (PubMed:<a href="http://www.uniprot.org/citations/25119034" target="\_blank">25119034</a>, PubMed:<a href="http://www.uniprot.org/citations/25121752" target="\_blank">25121752</a>, PubMed:<a href="http://www.uniprot.org/citations/26375003" target="\_blank">26375003</a>, PubMed:<a href="http://www.uniprot.org/citations/31268602" target="\_blank">31268602</a>, PubMed:<a href="http://www.uniprot.org/citations/32109412" target="\_blank">32109412</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>, PubMed:<a href="http://www.uniprot.org/citations/37993714" target="\_blank">37993714</a>). In the non-canonical inflammasome, CASP4 is activated by direct binding to the lipid A moiety of LPS without the need of an upstream sensor (PubMed:<a href="http://www.uniprot.org/citations/25119034" target="\_blank">25119034</a>, PubMed:<a href="http://www.uniprot.org/citations/25121752" target="\_blank">25121752</a>, PubMed:<a href="http://www.uniprot.org/citations/29520027" target="\_blank">29520027</a>, PubMed:<a href="http://www.uniprot.org/citations/32510692" target="\_blank">32510692</a>, PubMed:<a href="http://www.uniprot.org/citations/32581219" target="\_blank">32581219</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>). LPS-binding promotes CASP4 activation and CASP4-mediated cleavage of GSDMD and IL18, followed by IL18 secretion through the GSDMD pore, pyroptosis of infected cells and their extrusion into the gut lumen (PubMed:<a href="http://www.uniprot.org/citations/25119034" target="\_blank">25119034</a>, PubMed:<a href="http://www.uniprot.org/citations/25121752" target="\_blank">25121752</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>, PubMed:<a href="http://www.uniprot.org/citations/37993714" target="\_blank">37993714</a>). Also indirectly promotes secretion of mature cytokines (IL1A and HMGB1) downstream of GSDMD-mediated pyroptosis via activation of the NLRP3 and NLRP6 inflammasomes (PubMed:<a href="http://www.uniprot.org/citations/26375003" target="\_blank">26375003</a>, PubMed:<a href="http://www.uniprot.org/citations/32109412" target="\_blank">32109412</a>). Involved in NLRP3-dependent CASP1 activation and IL1B secretion in response to non-canonical activators, such as UVB radiation or cholera enterotoxin (PubMed:<a href="http://www.uniprot.org/citations/22246630" target="\_blank">22246630</a>, PubMed:<a href="http://www.uniprot.org/citations/23516580" target="\_blank">23516580</a>, PubMed:<a href="http://www.uniprot.org/citations/24879791" target="\_blank">24879791</a>, PubMed:<a href="http://www.uniprot.org/citations/25964352" target="\_blank">25964352</a>, PubMed:<a href="http://www.uniprot.org/citations/26173988" target="\_blank">26173988</a>, PubMed:<a href="http://www.uniprot.org/citations/26174085" target="\_blank">26174085</a>, PubMed:<a href="http://www.uniprot.org/citations/26508369" target="\_blank">26508369</a>). Involved in NLRP6 inflammasome- dependent activation in response to lipoteichoic acid (LTA), a cell- wall component of Gram-positive bacteria, which leads to CASP1 activation and IL1B secretion

(PubMed:<a href="http://www.uniprot.org/citations/33377178" target="\_blank">33377178</a>). Involved in LPS- induced IL6 secretion; this activity may not require caspase enzymatic activity (PubMed:<a href="http://www.uniprot.org/citations/26508369" target="\_blank">26508369</a>). The non-canonical inflammasome is required for innate immunity to cytosolic, but not vacuolar, bacteria (By similarity). Plays a crucial role in the restriction of S.typhimurium replication in colonic epithelial cells during infection (PubMed:<a href="http://www.uniprot.org/citations/25121752" target="\_blank">25121752</a>, PubMed:<a href="http://www.uniprot.org/citations/25964352" target="\_blank">25964352</a>). Activation of the non-canonical inflammasome in brain endothelial cells can lead to excessive pyroptosis, leading to blood-brain barrier breakdown (By similarity). Pyroptosis limits bacterial replication, while cytokine secretion promotes the recruitment and activation of immune cells and triggers mucosal inflammation (PubMed:<a href="http://www.uniprot.org/citations/25121752" target="\_blank">25121752</a>, PubMed:<a href="http://www.uniprot.org/citations/25964352" target="\_blank">25964352</a>, PubMed:<a href="http://www.uniprot.org/citations/26375003" target="\_blank">26375003</a>). May also act as an activator of adaptive immunity in dendritic cells, following activation by oxidized phospholipid 1- palmitoyl-2-arachidonoyl- sn-glycero-3-phosphorylcholine, an oxidized phospholipid (oxPAPC) (By similarity). Involved in cell death induced by endoplasmic reticulum stress and by treatment with cytotoxic APP peptides found in Alzheimer's patient brains (PubMed:<a href="http://www.uniprot.org/citations/15123740" target="\_blank">15123740</a>, PubMed:<a href="http://www.uniprot.org/citations/22246630" target="\_blank">22246630</a>, PubMed:<a href="http://www.uniprot.org/citations/23661706" target="\_blank">23661706</a>). Cleavage of GSDMD is not strictly dependent on the consensus cleavage site but depends on an exosite interface on CASP4 that recognizes and binds the Gasdermin-D, C- terminal (GSDMD-CT) part (PubMed:<a href="http://www.uniprot.org/citations/32109412" target="\_blank">32109412</a>). Catalyzes cleavage and maturation of IL18; IL18 processing also depends of the exosite interface on CASP4 (PubMed:<a href="http://www.uniprot.org/citations/15326478" target="\_blank">15326478</a>, PubMed:<a href="http://www.uniprot.org/citations/37993712" target="\_blank">37993712</a>, PubMed:<a href="http://www.uniprot.org/citations/37993714" target="\_blank">37993714</a>). In contrast, it does not directly process IL1B (PubMed:<a href="http://www.uniprot.org/citations/7743998" target="\_blank">7743998</a>, PubMed:<a href="http://www.uniprot.org/citations/7797510" target="\_blank">7797510</a>, PubMed:<a href="http://www.uniprot.org/citations/7797592" target="\_blank">7797592</a>). During non-canonical inflammasome activation, cuts CGAS and may play a role in the regulation of antiviral innate immune activation (PubMed:<a href="http://www.uniprot.org/citations/28314590" target="\_blank">28314590</a>).

### Cellular Location

Cytoplasm, cytosol. Endoplasmic reticulum membrane; Peripheral membrane protein; Cytoplasmic side. Mitochondrion Inflammasome. Secreted Note=Predominantly localizes to the endoplasmic reticulum (ER) Association with the ER membrane requires TMEM214 (PubMed:15123740) Released in the extracellular milieu by keratinocytes following UVB irradiation (PubMed:22246630).

### Tissue Location

Widely expressed, including in keratinocytes and colonic and small intestinal epithelial cells (at protein level). Not detected in brain.

## Goat Anti-CASP4 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)

- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

### Goat Anti-CASP4 Antibody - Images



AF1194a (0.3 µg/ml) staining of Human Heart lysate (35 µg protein in RIPA buffer). Primary incubation was 1 hour. Detected by chemiluminescence.

### Goat Anti-CASP4 Antibody - Background

This gene encodes a protein that is a member of the cysteine-aspartic acid protease (caspase) family. Sequential activation of caspases plays a central role in the execution-phase of cell apoptosis. Caspases exist as inactive proenzymes composed of a prodomain and a large and small protease subunit. Activation of caspases requires proteolytic processing at conserved internal aspartic residues to generate a heterodimeric enzyme consisting of the large and small subunits. This caspase is able to cleave and activate its own precursor protein, as well as caspase 1 precursor. When overexpressed, this gene induces cell apoptosis. Alternative splicing results in transcript variants encoding distinct isoforms.

### Goat Anti-CASP4 Antibody - References

- A Large-scale genetic association study of esophageal adenocarcinoma risk. Liu CY, et al. *Carcinogenesis*, 2010 Jul. PMID 20453000.
- Mutational analysis of caspase genes in prostate carcinomas. Kim MS, et al. *APMIS*, 2010 Apr. PMID 20402676.
- New genetic associations detected in a host response study to hepatitis B vaccine. Davila S, et al. *Genes Immun*, 2010 Apr. PMID 20237496.
- Association between genetic variants in VEGF, ERCC3 and occupational benzene haematotoxicity. Hosgood HD 3rd, et al. *Occup Environ Med*, 2009 Dec. PMID 19773279.
- Common genetic variants in candidate genes and risk of familial lymphoid malignancies. Liang XS, et al. *Br J Haematol*, 2009 Aug. PMID 19573080.