

Recombinant Mouse CASP4 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51496

Size: 10ug, 100ug

Protein Name: Caspase-4 (CASP-4) (EC 3.4.22.64) (Caspase-11) (CASP-11) (Protease ICH-3) [Cleaved into: Caspase-4 subunit p10; Caspase-4 subunit p20]

Synonym: Casp4, Casp11, Caspl, Ich3

UniProt ID: P70343

UniProt Link: www.uniprot.org/uniprotkb/P70343/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 373 AA

Molecular Weight: 43 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MAENKHPDKPLKVLEQLGKEVLTEYLEKLVQSNVLKLKEEDKQKFNNNAERSDKRWVFVDAMKKKHS
KVGEMLLQTFFSVDPGSHHGGEANLEMEPEESLNTLKLCSPEEFTRLCREKTQEIYPIKEANGRTRK
ALIICNTEFKHLRLRYGANFDIIGMKGLLEDLGYDVVKEELTAEGMESEMKDFAALSEHQTSDSTFLV
LSHGTLHGICGTMHSEKTPDVLQYDTIYQIFNNCHCPGLRDKPKVIIVQACRGGNSGEMWIRESSK
PQLCRGVDLPRNMEADAVKLSHVEKDFIAFYSTTPHLSYRDKTGGSYFITRLISCFRKHACSCHLFD
IFLKVQQSFEEKASIHSQMPTIDRATLTRYFYLFPGN

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Caspase-4 (CASP-4) (EC 3.4.22.64) (Caspase-11) (CASP-11) (Protease ICH-3) [Cleaved into: Caspase-4 subunit p10; Caspase-4 subunit p20] produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Inflammatory caspase that acts as the effector of the non-canonical inflammasome by mediating lipopolysaccharide (LPS)-induced pyroptosis (PubMed:22002608, PubMed:23348507, PubMed:23887873, PubMed:24031018, PubMed:25119034, PubMed:30135078, PubMed:37001519, PubMed:38632402). Also indirectly activates the NLRP3 and NLRP6 inflammasomes (PubMed:26320999, PubMed:30392956, PubMed:37001519). Acts as a thiol protease that cleaves a tetrapeptide after an Asp residue at position P1: catalyzes cleavage of CGAS and GSDMD (PubMed:26375003, PubMed:28314590, PubMed:30392956, PubMed:38632402). In contrast to its human ortholog, does not cleave IL18 (PubMed:37993712, PubMed:37993714). 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 and IL18 (PubMed:22002608, PubMed:22895188, PubMed:23348507, PubMed:23887873, PubMed:24031018, PubMed:26320999, PubMed:26375003, PubMed:30135078, PubMed:30589883). In the non-canonical inflammasome, CASP4/CASP11 is activated by direct binding to the lipid A moiety of LPS without the need of an upstream sensor (PubMed:22002608, PubMed:23348507, PubMed:25119034, PubMed:37001519, PubMed:38632402). LPS-binding promotes CASP4/CASP11 activation and CASP4/CASP11-mediated cleavage of GSDMD, followed by pyroptosis of infected cells and their extrusion into the gut lumen (PubMed:22002608, PubMed:23348507, PubMed:25119034, PubMed:38632402). Also indirectly promotes secretion of mature cytokines (IL1A, IL18 and HMGB1) downstream of GSDMD-mediated pyroptosis via activation of the NLRP3 and NLRP6 inflammasomes (By similarity). Involved in NLRP3-dependent CASP1 activation and IL1B and IL18 secretion in response to non-canonical activators, such as UVB radiation or cholera enterotoxin (PubMed:26320999). 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 and IL18 secretion (PubMed:30392956). Involved in LPS-induced IL6 secretion; this activity may not require caspase enzymatic activity (By similarity). The non-canonical inflammasome is required for innate immunity to cytosolic, but not vacuolar, bacteria (PubMed:23348507). Plays a crucial role in the restriction of S.typhimurium replication in colonic epithelial cells during infection (PubMed:25121752, PubMed:26375003, PubMed:34671164). Activation of the non-canonical inflammasome in brain endothelial cells can lead to excessive pyroptosis, leading to blood-brain barrier breakdown (PubMed:38632402). Pyroptosis limits bacterial replication, while cytokine secretion promotes the recruitment and activation of immune cells and triggers mucosal inflammation (PubMed:25121752). 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) (PubMed:27103670). Cleavage of GSDMD is not strictly dependent on the consensus cleavage site but depends on an exosite interface on CASP4/CASP11 that recognizes and binds the Gasdermin-D, C-terminal (GSDMD-CT) part (PubMed:32109412, PubMed:32554464). In contrast, it does not directly process IL1B (PubMed:8702803, PubMed:9038361). During non-canonical inflammasome activation, cuts CGAS and may play a role in the regulation of antiviral innate immune activation (PubMed:28314590).

Subcellular Localization: Cytoplasm, cytosol . Cytoplasm . 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. Released in the extracellular milieu by keratinocytes following UVB irradiation.

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer- composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.