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Caspase 11 Rabbit mAb

Catalog # AP75193

Product Information

Application	WB, IP
Primary Accession	P70343
Reactivity	Mouse
Host	Rabbit
Clonality	Monoclonal Antibody
Isotype	IgG
Conjugate	Unconjugated
Purification	Affinity Purified
Calculated MW	42742

Additional Information

Gene ID	12363
Other Names	Casp4
Dilution	WB~~1:2000-1:10000 IP~~1:20-1:50
Format	1xPBS(pH 7.4), 150mM NaCl, 50% Glycerol, 0.02% Sodium azide and 0.05% BSA
Storage	Store at 4°C short term. Aliquot and store at -20°C long term. Avoid freeze/thaw cycles.

Protein Information

Name	Casp4 {ECO:0000312|MGI:MGI:107700}
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).

Cellular Location

Cytoplasm, cytosol {ECO:0000250|UniProtKB:P49662}. Cytoplasm. Endoplasmic reticulum membrane {ECO:0000250|UniProtKB:P49662}; Peripheral membrane protein {ECO:0000250|UniProtKB:P49662}; Cytoplasmic side {ECO:0000250|UniProtKB:P49662}. Mitochondrion {ECO:0000250|UniProtKB:P49662}. Inflammasome. Secreted {ECO:0000250|UniProtKB:P49662} 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 {ECO:0000250|UniProtKB:P49662}

Tissue Location

Widely expressed, including in thymus, lung and spleen (at protein level). Very low levels, if any, in the brain

Background

Proinflammatory caspase. Essential effector of NLRP3 inflammasome-dependent CASP1 activation and IL1B and IL18 secretion in response to non-canonical activators, such as UVB radiation, cholera enterotoxin subunit B and cytosolic LPS, as well as infection with Gram-negative bacteria. Independently of NLRP3 inflammasome and CASP1, promotes pyroptosis, through GSDMD cleavage and activation, and IL1A, IL18 and HMGB1 release in response to non-canonical inflammasome activators.

Images



Western blot analysis of Caspase11 in C6, 3T3, Hela lysates using Caspase 11 antibody.

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