

Recombinant Human GSDMD Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50395

Size: 10ug, 100ug

Protein Name: Gasdermin-D (Gasdermin domain-containing protein 1) [Cleaved into: Gasdermin-D, N-terminal (GSDMD-NT) (hGSDMD-NTD); Gasdermin-D, C-terminal (GSDMD-CT) (hGSDMD-CTD); Gasdermin-D, p13 (Gasdermin-D, 13 kDa) (13 kDa GSDMD); Gasdermin-D, p40]

Synonym: GSDMD, DFNA5L, GSDMDC1, FKSG10

UniProt ID: P57764

UniProt Link: www.uniprot.org/uniprotkb/P57764/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 484 AA

Molecular Weight: 53 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MGSAFERVVRVQELDHGGEFIPVTSLSSTGFQPYCLVVRKPSSSWFWKPRYKCVNLSIKDILEP
DAAEPDVQRGRSFHFYDAMDGGIQQGSVELAAPGQAKIAGGAASDSSSTSMNVYSLSDPNTWQT
LLHERHLRQPEHKVLQQLRSRGDNVYVTEVLQTQKEVEVTRTHKREGSGRFSLPATCLQGEGQ
GHLSQKKTVTIPSGSTLAFRVAQLVIDSDLVLLFPDKKQRTFQPPATGHKRSTSEGAWPQLPSGLS
MMRCLHNFLTDGVPAGEAFTEDFQGLRAEVETISKELELLDRELCQLLLEGLEGVLRDQLALRALEE
ALEQQQSLGPVEPLDGPAGAVLECLVLSSGMLVPELAIPVVYLLGALTMLSETQHKLLAEALLESQTLL
GPLELVGSLLEQSAPWQERSTMSLPGLLGNSWGEGAPAWVLLDECGLLELGEDTPHVCWEPQAAQ
GRMCALYASLALLSGLSQEPH

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 Gasdermin-D (Gasdermin domain-containing protein 1) [Cleaved into: Gasdermin-D, N-terminal (GSDMD-NT) (hGSDMD-NTD); Gasdermin-D, C-terminal (GSDMD-CT) (hGSDMD-CTD); Gasdermin-D, p13 (Gasdermin-D, 13 kDa) (13 kDa GSDMD); Gasdermin-D, p40] 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: [Gasdermin-D]: Precursor of a pore-forming protein that plays a key role in host defense against pathogen infection and danger signals (PubMed:26375003, PubMed:26375259, PubMed:27281216). This form constitutes the precursor of the pore-forming protein: upon cleavage, the released N-terminal moiety (Gasdermin-D, N-terminal) binds to membranes and forms pores, triggering pyroptosis (PubMed:26375003, PubMed:26375259, PubMed:27281216, PubMed:39673710, PubMed:40118151).; [Gasdermin-D, N-terminal]: Promotes pyroptosis in response to microbial infection and danger signals (PubMed:26375003, PubMed:26375259, PubMed:27418190, PubMed:28392147, PubMed:32820063, PubMed:34289345, PubMed:38040708, PubMed:38530158, PubMed:38599239). Produced by the cleavage of gasdermin-D by inflammatory caspases CASP1, CASP4 or CASP5 in response to canonical, as well as non-canonical (such as cytosolic LPS) inflammasome activators (PubMed:26375003, PubMed:26375259, PubMed:27418190). After cleavage, moves to the plasma membrane where it strongly binds to inner leaflet lipids, including monophosphorylated phosphatidylinositols, such as phosphatidylinositol 4-phosphate, bisphosphorylated phosphatidylinositols, such as phosphatidylinositol (4,5)-bisphosphate, as well as phosphatidylinositol (3,4,5)-bisphosphate, and more weakly to phosphatidic acid and phosphatidylserine (PubMed:27281216, PubMed:29898893, PubMed:36227980). Homooligomerizes within the membrane and forms pores of 10-15 nanometers (nm) of inner diameter, allowing the release of mature interleukin-1 (IL1B and IL18) and triggering pyroptosis (PubMed:27281216, PubMed:27418190, PubMed:29898893, PubMed:33883744, PubMed:38040708, PubMed:38530158, PubMed:38599239). Gasdermin pores also allow the release of mature caspase-7 (CASP7) (By similarity). In some, but not all, cells types, pyroptosis is followed by pyroptotic cell death, which is caused by downstream activation of ninjurin-1 (NINJ1), which mediates membrane rupture (cytolysis) (PubMed:33472215, PubMed:37198476). Also forms pores in the mitochondrial membrane, resulting in release of mitochondrial DNA (mtDNA) into the cytosol (By similarity). Gasdermin-D, N-terminal released from pyroptotic cells into the extracellular milieu rapidly binds to and kills both Gram-negative and Gram-positive bacteria, without harming neighboring mammalian cells, as it does not disrupt the plasma membrane from the outside due to lipid-binding specificity (PubMed:27281216). Under cell culture conditions, also active against intracellular bacteria, such as *Listeria monocytogenes* (By similarity). Also active in response to MAP3K7/TAK1 inactivation by *Yersinia* toxin YopJ, which triggers cleavage by CASP8 and subsequent activation (By similarity). Required for mucosal tissue defense against enteric pathogens (By similarity). Activation of the non-canonical inflammasome in brain endothelial cells can lead to excessive pyroptosis, leading to blood-brain barrier breakdown (By similarity). Strongly binds to bacterial and mitochondrial lipids, including cardiolipin (PubMed:27281216). Does not bind to unphosphorylated phosphatidylinositol, phosphatidylethanolamine nor phosphatidylcholine (PubMed:27281216).; [Gasdermin-D, p13]: Transcription coactivator produced by the cleavage by CASP3 or CASP7 in the upper small intestine in response to dietary antigens (By similarity). Required to maintain food tolerance in small intestine: translocates to the nucleus and acts as a coactivator for STAT1 to induce the transcription of CIITA and MHC class II molecules, which in turn induce type 1 regulatory T (Tr1) cells in upper small

intestine (By similarity).; [Gasdermin-D, p40]: Produced by the cleavage by papain allergen (PubMed:35794369). After cleavage, moves to the plasma membrane and homooligomerizes within the membrane and forms pores of 10-15 nanometers (nm) of inner diameter, allowing the specific release of mature interleukin-33 (IL33), promoting type 2 inflammatory immune response (PubMed:35794369).

Subcellular Localization: [Gasdermin-D]: Cytoplasm, cytosol . Inflammasome . Note=In response to a canonical inflammasome stimulus, such as nigericin, recruited to NLRP3 inflammasome with similar kinetics to that of uncleaved CASP1 precursor.; [Gasdermin-D, N-terminal]: Cell membrane ; Multi-pass membrane protein . Secreted . Mitochondrion membrane . Note=Released in the extracellular milieu following pyroptosis.; [Gasdermin-D, N-terminal]: Cytoplasm, cytosol . Note=(Microbial infection) Upon infection by M.tuberculosis, localization to cell membrane is prevented by M.tuberculosis phosphatase PtpB that catalyzes dephosphorylation of phosphatidylinositol (4,5)-bisphosphate and phosphatidylinositol 4-phosphate, thereby inhibiting the membrane targeting of Gasdermin-D, N-terminal and subsequent cytokine release and pyroptosis.; [Gasdermin-D, p13]: Nucleus .; [Gasdermin-D, C-terminal]: Cytoplasm, cytosol .

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.