Datasheet for ABIN7554755

NLRP1 Protein (AA 1-1473) (His tag)

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Overview

Quantity:	1 mg
Target:	NLRP1
Protein Characteristics:	AA 1-1473
Origin:	Human
Source:	HEK-293 Cells
Protein Type:	Recombinant
Purification tag / Conjugate:	This NLRP1 protein is labelled with His tag.

Product Details

Purpose:	Custom-made recombinant NLRP1 Protein expressed in mammalian cells.
Sequence:	MAGGAWGRLA CYLEFLKKEE LKEFQLLLAN KAHSRSSSGE TPAQPEKTSG MEVASYLVAQ YGEQRAWDLA LHTWEQMGLR SLCAQAQEGA GHSPSFPYSP SEPHLGSPSQ PTSTAVLMPW IHELPAGCTQ GSERRVLRQL PDTSGRRWRE ISASLLYQAL PSSPDHESPS QESPNAPTST AVLGSWGSPP QPSLAPREQE APGTQWPLDE TSGIYYTEIR ERE REKSEKG RPPWAAVVGT PPQAHTSLQP HHHPWEPSVR ESLCSTWPWK NEDFNQKFTQ LLLLQRPHPR SQDPLVKRSW PDYVEENRGH LIEIRDLFGP GLDTQEPRIV ILQGAAGIGK STLARQVKEA WGRGQLYGDR FQHVFYFSCR ELAQSKVVSL AELIGKDGTA TPAPIRQILS RPERLLFILD GVDEPGWVLQ EPSSELCLHW SQPQPADALL GSLLGKTILP EASFLITART TALQNLIPSL EQARWVEVLG FSESSRKEYF YRYFTDERQA IRAFRLVKSN KELWALCLVP WVSWLACTCL MQQMKRKEKL TLTSKTTTTL CLHYLAQALQ AQPLGPQLRD LCSLAAEGIW QKKTLFSPDD LRKHGLDGAI ISTFLKMGIL QEHPIPLSYS FIHLCFQEFF AAMSYVLEDE KGRGKHSNCI IDLEKTLEAY GIHGLFGAST TRFLLGLLSD EGEREMENIF HCRLSQGRNL MQWVPSLQLL LQPHSLESLH

	CLYETRNKTF LTQVMAHFEE MGMCVETDME LLVCTFCIKF SRHVKKLQLI EGRQHRSTWS PTMVVLFRWV PVTDAYWQIL FSVLKVTRNL KELDLSGNSL SHSAVKSLCK TLRRPRCLLE TLRLAGCGLT AEDCKDLAFG LRANQTLTEL DLSFNVLTDA GAKHLCQRLR QPSCKLQRLQ LVSCGLTSDC CQDLASVLSA SPSLKELDLQ QNNLDDVGVR LLCEGLRHPA CKLIRLGLDQ TTLSDEMRQE LRALEQEKPQ LLIFSRRKPS VMTPTEGLDT GEMSNSTSSL KRQRLGSERA ASHVAQANLK LLDVSKIFPI AEIAEESSPE VVPVELLCVP SPASQGDLHT KPLGTDDDFW GPTGPVATEV VDKEKNLYRV HFPVAGSYRW PNTGLCFVMR EAVTVEIEFC VWDQFLGEIN PQHSWMVAGP LLDIKAEPGA VEAVHLPHFV ALQGGHVDTS LFQMAHFKEE GMLLEKPARV ELHHIVLENP SFSPLGVLLK MIHNALRFIP VTSVVLLYHR VHPEEVTFHL YLIPSDCSIR KAIDDLEMKF QFVRIHKPPP LTPLYMGCRY TVSGSGSGML EILPKELELC YRSPGEDQLF SEFYVGHLGS GIRLQVKDKK DETLVWEALV KPGDLMPATT LIPPARIAVP SPLDAPQLLH FVDQYREQLI ARVTSVEVVL DKLHGQVLSQ EQYERVLAEN TRPSQMRKLF SLSQSWDRKC KDGLYQALKE THPHLIMELW EKGSKKGLLP LSS **Sequence without tag. The proposed Purification-Tag is based on experiences with the expression system, a different complexity of the protein could make another tag necessary. In case you have a special request, please contact us.**
Specificity:	If you are looking for a specific domain and are interested in a partial protein or a different isoform, please contact us regarding an individual offer.
Characteristics:	Key Benefits: • Made to order protein - from design to production - by highly experienced protein experts. • Protein expressed in mammalian cells and purified in one-step affinity chromatography • The optimized expression system ensures reliability for intracellular, secreted and transmembrane proteins. • State-of-the-art algorithm used for plasmid design (Gene synthesis). This protein is a made-to-order protein and will be made for the first time for your order. Our experts in the lab try to ensure that you receive soluble protein. If you are not interested in a full length protein, please contact us for individual protein fragments. The big advantage of ordering our made-to-order proteins in comparison to ordering custom made proteins from other companies is that there is no financial obligation in case the protein cannot be expressed or purified.
Purity:	> 90 % as determined by Bis-Tris PAGE, anti-tag ELISA, Western Blot and analytical SEC (HPLC)
Grade:	custom-made

Target Details

Target:	NLRP1
Alternative Name:	NLRP1 (NLRP1 Products)
Background:	NACHT, LRR and PYD domains-containing protein 1 (EC 3.4.-.-) (EC 3.6.4.-) (Caspase recruitment domain-containing protein 7) (Death effector filament-forming ced-4-like apoptosis protein) (Nucleotide-binding domain and caspase recruitment domain) [Cleaved into: NACHT, LRR and PYD domains-containing protein 1, C-terminus (NLRP1-CT), NACHT, LRR and PYD domains-containing protein 1, N-terminus (NLRP1-NT)],FUNCTION: Acts as the sensor component of the NLRP1 inflammasome, which mediates inflammasome activation in response to various pathogen-associated signals, leading to subsequent pyroptosis (PubMed:22665479, PubMed:12191486, PubMed:17349957, PubMed:27662089, PubMed:31484767, PubMed:33093214, PubMed:33410748, PubMed:33731929, PubMed:33731932, PubMed:35857590). Inflammasomes are supramolecular complexes that assemble in the cytosol in response to pathogens and other damage-associated signals and play critical roles in innate immunity and inflammation (PubMed:22665479, PubMed:12191486, PubMed:17349957). Acts as a recognition receptor (PRR): recognizes specific pathogens and other damage-associated signals, such as cleavage by some human enteroviruses and rhinoviruses, double-stranded RNA, UV-B irradiation, or Val-boroPro inhibitor, and mediates the formation of the inflammasome polymeric complex composed of NLRP1, CASP1 and PYCARD/ASC (PubMed:22665479, PubMed:12191486, PubMed:17349957, PubMed:25562666, PubMed:30291141, PubMed:30096351, PubMed:33243852, PubMed:33093214, PubMed:33410748, PubMed:35857590). In response to pathogen-associated signals, the N-terminal part of NLRP1 is degraded by the proteasome, releasing the cleaved C-terminal part of the protein (NACHT, LRR and PYD domains-containing protein 1, C-terminus), which polymerizes and associates with PYCARD/ASC to initiate the formation of the inflammasome complex: the NLRP1 inflammasome recruits pro-caspase-1 (proCASP1) and promotes caspase-1 (CASP1) activation, which subsequently cleaves and activates inflammatory cytokines IL1B and IL18 and gasdermin-D (GSDMD), leading to pyroptosis (PubMed:22665479, PubMed:12191486, PubMed:17349957, PubMed:32051255, PubMed:33093214). In the absence of GSDMD expression, the NLRP1 inflammasome is able to recruit and activate CASP8, leading to activation of gasdermin-E (GSDME) (PubMed:33852854, PubMed:35594856). Activation of NLRP1 inflammasome is also required for HMGB1 secretion, the active cytokines and HMGB1 stimulate inflammatory responses (PubMed:22801494). Binds ATP and shows ATPase activity (PubMed:11113115, PubMed:15212762, PubMed:33243852). Plays an important role in antiviral immunity and inflammation in the human airway epithelium (PubMed:33093214). Specifically recognizes a number of pathogen-associated signals: upon

infection by human rhinoviruses 14 and 16 (HRV-14 and HRV-16), NLRP1 is cleaved and activated which triggers NLRP1-dependent inflammasome activation and IL18 secretion (PubMed:33093214). Positive-strand RNA viruses, such as Semliki forest virus and long dsRNA activate the NLRP1 inflammasome, triggering IL1B release in a NLRP1-dependent fashion (PubMed:33243852). Acts as a direct sensor for long dsRNA and thus RNA virus infection (PubMed:33243852). May also be activated by muramyl dipeptide (MDP), a fragment of bacterial peptidoglycan, in a NOD2-dependent manner (PubMed:18511561). The NLRP1 inflammasome is also activated in response to UV-B irradiation causing ribosome collisions: ribosome collisions cause phosphorylation and activation of NLRP1 in a MAP3K20-dependent manner, leading to pyroptosis (PubMed:35857590). {ECO:0000269|PubMed:11113115, ECO:0000269|PubMed:12191486, ECO:0000269|PubMed:15212762, ECO:0000269|PubMed:17349957, ECO:0000269|PubMed:18511561, ECO:0000269|PubMed:22665479, ECO:0000269|PubMed:22801494, ECO:0000269|PubMed:25562666, ECO:0000269|PubMed:27662089, ECO:0000269|PubMed:30096351, ECO:0000269|PubMed:30291141, ECO:0000269|PubMed:31484767, ECO:0000269|PubMed:32051255, ECO:0000269|PubMed:33093214, ECO:0000269|PubMed:33243852, ECO:0000269|PubMed:33410748, ECO:0000269|PubMed:33731929, ECO:0000269|PubMed:33731932, ECO:0000269|PubMed:33852854, ECO:0000269|PubMed:35594856, ECO:0000269|PubMed:35857590}., FUNCTION: [NACHT, LRR and PYD domains-containing protein 1]: Constitutes the precursor of the NLRP1 inflammasome, which mediates autoproteolytic processing within the FIIND domain to generate the N-terminal and C-terminal parts, which are associated non-covalently in absence of pathogens and other damage-associated signals. {ECO:0000269|PubMed:22087307}., FUNCTION: [NACHT, LRR and PYD domains-containing protein 1, N-terminus]: Regulatory part that prevents formation of the NLRP1 inflammasome: in absence of pathogens and other damage-associated signals, interacts with the C-terminal part of NLRP1 (NACHT, LRR and PYD domains-containing protein 1, C-terminus), preventing activation of the NLRP1 inflammasome (PubMed:33093214). In response to pathogen-associated signals, this part is ubiquitinated and degraded by the proteasome, releasing the cleaved C-terminal part of the protein, which polymerizes and forms the NLRP1 inflammasome (PubMed:33093214). {ECO:0000269|PubMed:33093214}., FUNCTION: [NACHT, LRR and PYD domains-containing protein 1, C-terminus]: Constitutes the active part of the NLRP1 inflammasome (PubMed:33093214, PubMed:33731929, PubMed:33731932). In absence of pathogens and other damage-associated signals, interacts with the N-terminal part of NLRP1 (NACHT, LRR and PYD domains-containing protein 1, N-terminus), preventing activation of the NLRP1

Target Details

	inflammasome (PubMed:33093214). In response to pathogen-associated signals, the N-terminal part of NLRP1 is degraded by the proteasome, releasing this form, which polymerizes and associates with PYCARD/ASC to form of the NLRP1 inflammasome complex: the NLRP1 inflammasome complex then directly recruits pro-caspase-1 (proCASP1) and promotes caspase-1 (CASP1) activation, leading to gasdermin-D (GSDMD) cleavage and subsequent pyroptosis (PubMed:33093214). {ECO:0000269|PubMed:33093214, ECO:0000269|PubMed:33731929, ECO:0000269|PubMed:33731932}., FUNCTION: [Isoform 2]: It is unclear whether is involved in inflammasome formation. It is not cleaved within the FIIND domain, does not assemble into specks, nor promote IL1B release (PubMed:22665479). However, in an vitro cell-free system, it has been shown to be activated by MDP (PubMed:17349957). {ECO:0000269|PubMed:17349957, ECO:0000269|PubMed:22665479}.
Molecular Weight:	165.9 kDa
UniProt:	Q9C000
Pathways:	Positive Regulation of Endopeptidase Activity, Inflammasome

Application Details

Application Notes:	We expect the protein to work for functional studies. As the protein has not been tested for functional studies yet we cannot offer a guarantee though.
Restrictions:	For Research Use only

Handling

Format:	Liquid
Buffer:	The buffer composition is at the discretion of the manufacturer.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	12 months