

Recombinant Human STING Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50936

Size: 10ug, 100ug

Protein Name: Stimulator of interferon genes protein (hSTING) (Endoplasmic reticulum interferon stimulator) (ERIS) (Mediator of IRF3 activation) (hMITA) (Transmembrane protein 173)

Synonym: STING1, ERIS, MITA, STING, TMEM173

UniProt ID: Q86WV6

UniProt Link: www.uniprot.org/uniprotkb/Q86WV6/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 379 AA

Molecular Weight: 42 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTWGLGEPPEHTLRYLVLHLASLQLGLLLNGVCSLA
EELRHIHSRYRGSYWRTVRACLGCP LRRGALLLLSIYFYSLPNAVGPFTWMLALLGLSQALNILLG
LKGLAPAEISAVCEKGNFNVAHGLAWSYYIGYLRLLPELQARIRTYNQHYNNLLRGAVSQRLYILLPL
DCGVDPNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYELLENGQRAGTCVLEYATPLQTLFAM
SQYSQAGFSREDRLAQAKLFCRTLEDILADAPESQNNCRLLIAYQEPADDSSFSLSQEVLRLRQEEK
EEVTVGSLKTSAPVSTSTMSQEPPELLISGMEKPLPLRTDFS

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 Stimulator of interferon genes protein (hSTING) (Endoplasmic reticulum interferon stimulator) (ERIS) (Mediator of IRF3 activation) (hMITA) (Transmembrane protein 173) 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: Key innate immune signaling adapter that promotes the production of type I interferon (IFN- α and IFN- β) in response to the presence of DNA from bacteria and viruses in the cytosol (PubMed:18724357, PubMed:18818105, PubMed:19433799, PubMed:19776740, PubMed:23027953, PubMed:23747010, PubMed:23910378, PubMed:25704810, PubMed:27801882, PubMed:29973723, PubMed:30842659, PubMed:31992625, PubMed:32926474, PubMed:35045565, PubMed:35388221, PubMed:36808561, PubMed:37086726, PubMed:37832545, PubMed:39255680, PubMed:39947179). Innate immune response is triggered by non-CpG double-stranded DNA from viruses and bacteria delivered to the cytoplasm, which induces production of cyclic dinucleotides that bind and activate STING1: STING1 recognizes and binds cyclic di-GMP (c-di-GMP), a second messenger produced by bacteria, cyclic UMP-AMP (2',3'-cUAMP), and cyclic GMP-AMP (cGAMP), a messenger produced by CGAS in response to DNA in the cytosol (PubMed:21947006, PubMed:23258412, PubMed:23707065, PubMed:23722158, PubMed:23747010, PubMed:23910378, PubMed:26229117, PubMed:26300263, PubMed:30842659, PubMed:35388221, PubMed:37086726, PubMed:37379839). Upon binding to c-di-GMP, cUAMP or cGAMP, STING1 oligomerizes and buds from the endoplasmic reticulum into COPII vesicles, which then form the endoplasmic reticulum-Golgi intermediate compartment (ERGIC) (PubMed:30842662, PubMed:41639452, PubMed:41639454, PubMed:41887218). It is then phosphorylated by TBK1 on the pLxIS motif, leading to recruitment and subsequent activation of the transcription factor IRF3 to induce expression of type I interferon and exert a potent antiviral state (PubMed:22394562, PubMed:25636800, PubMed:29973723, PubMed:30643259, PubMed:30842653, PubMed:32926474, PubMed:35045565, PubMed:35388221, PubMed:38917796). Also involved in intercellular immune signaling: cross-activated by 2',3'-cGAMP previously generated in virus-infected cells, triggering type I interferon signaling in macrophages and uninfected neighboring cells to propagate and amplify the antiviral immune response (PubMed:24077100, PubMed:31992625). In addition to promote the production of type I interferon, cGAS-STING signaling also activates the NF- κ -B signaling: mechanistically, STING1 recruits TRAF6, leading to degradation of the NF- κ -B inhibitor and subsequent translocation of NF- κ -B into the nucleus (PubMed:32268090, PubMed:38917796, PubMed:39262777, PubMed:40973797, PubMed:41747053). Activation of NF- κ -B signaling takes place in the endolysosome and is independent of type I interferon response via direct activation by RNA viruses (PubMed:40973797, PubMed:41747053). Independently of type I interferon production, plays a direct role in autophagy (PubMed:30568238, PubMed:30842662, PubMed:32926474). The ERGIC serves as the membrane source for WIPI2 recruitment and LC3 lipidation, leading to formation of autophagosomes that target cytosolic DNA or DNA viruses for degradation by the lysosome (PubMed:30842662). Promotes autophagy by acting as a proton channel that directs proton efflux from the Golgi to facilitate MAP1LC3B/LC3B lipidation (PubMed:37535724, PubMed:39947179). The autophagy- and interferon-inducing activities can be uncoupled and autophagy induction is independent of TBK1 phosphorylation (PubMed:30568238, PubMed:30842662). Autophagy is also triggered upon infection by bacteria: following c-di-GMP-binding, which is produced by live Gram-positive bacteria, promotes reticulophagy (By similarity). The proton channel activity also regulates lysosome biogenesis by activating transcription factors TFEB and TFE3, driving the expression of lysosome-related genes: activated STING1 in post-Golgi vesicles induces proton efflux and lipidation of GABARAP, sequestering the FLCN-FNIP complex and blocking mTORC1-dependent inhibition of

TFEB and TFE3 (PubMed:39423796, PubMed:39689715). May be involved in transduction of apoptotic signals via its association with the major histocompatibility complex class II (MHC-II) (By similarity).; (Microbial infection) Antiviral activity is antagonized by oncoproteins, such as papillomavirus (HPV) protein E7 and adenovirus early E1A protein (PubMed:26405230). Such oncoproteins prevent the ability to sense cytosolic DNA (PubMed:26405230).

Subcellular Localization: Endoplasmic reticulum-Golgi intermediate compartment membrane ; Multi-pass membrane protein . Endoplasmic reticulum membrane ; Multi-pass membrane protein . Cytoplasm, perinuclear region . Golgi apparatus membrane ; Multi-pass membrane protein . Golgi apparatus, trans-Golgi network membrane ; Multi-pass membrane protein . Cytoplasmic vesicle, autophagosome membrane ; Multi-pass membrane protein . Endosome membrane ; Multi-pass membrane protein . Lysosome membrane ; Multi-pass membrane protein . Mitochondrion outer membrane ; Multi-pass membrane protein . Cell membrane ; Multi-pass membrane protein .
Note=Localizes to the endoplasmic reticulum when inactive (PubMed:19433799, PubMed:29694889, PubMed:30842653, PubMed:30842659). Following activation by cyclic dinucleotides, such as cGAMP, translocates from the endoplasmic reticulum to the endoplasmic reticulum-Golgi intermediate compartment (ERGIC) in a COPII vesicles-dependent process, where the kinase TBK1 is recruited (PubMed:19433799, PubMed:29694889, PubMed:30842653, PubMed:30842659, PubMed:37832545). Translocation to the ERGIC compartment is also dependent on cholesterol and phosphoinositide, such as phosphatidylinositol 3,5-bisphosphate (PtdIns(3,5)P2), which directly bind STING1 at the interface between dimers and promote STING1 homooligomerization (PubMed:41639452, PubMed:41639454). STING1-containing ERGIC serves as a membrane source for LC3 lipidation, which is a key step in autophagosome biogenesis (PubMed:30842662). Activates NF-kappa-B signaling when localized to the endolysosome compartment (PubMed:40973797). Localizes in the lysosome membrane in a TMEM203-dependent manner (By similarity).

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.