abcam

ab227128

Anti-STING antibody [EPR13130] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR13130
Purification technique	Affinity purification Protein A
Concentration	1.018 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Human
Dilution info	-

Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information STING1

Function	Facilitator of innate immune signaling that acts as a sensor of cytosolic DNA from bacteria and viruses and promotes the production of type I interferon (IFN-alpha and IFN-beta) (PubMed:18724357, PubMed:18818105, PubMed:19433799, PubMed:19776740, PubMed:23027953, PubMed:23747010, PubMed:23910378, PubMed:27801882, PubMed:29973723, PubMed:30842659, PubMed:35045565, PubMed:35388221, PubMed:36808561, PubMed:37832545, PubMed:25704810, PubMed:39255680). Innate immune response is triggered in response to non-CpG double-stranded DNA from viruses and bacteria delivered to the cytoplasm (PubMed:26300263). Acts by binding cyclic dinucleotides: 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 virus in the cytosol (PubMed:21947006, PubMed:23258412, PubMed:23707065, PubMed:23722158, PubMed:23747010, PubMed:23910378, PubMed:26229117, PubMed:30842659, PubMed:35388221, PubMed:37379839). Upon binding to c-di-GMP, cUAMP or cGAMP, STING1 oligomerizes, translocates from the endoplasmic reticulum and is 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 anti-viral state (PubMed:22394562, PubMed:25636800, PubMed:29973723, PubMed:30842653, PubMed:35045565, PubMed:35388221). Exhibits 2',3' phosphodiester linkage-specific ligand recognition: can bind both 2'-3' linked cGAMP (2'-3'-cGAMP) and 3'-3' linked cGAMP but is preferentially activated by 2'-3' linked cGAMP (PubMed:23747010, PubMed:23910378, PubMed:26300263). The preference for 2'-3'-cGAMP, compared to other linkage isomers is probably due to the ligand itself, whichs adopts an organized free-ligand conformation that resembles the STING1-bound conformation and pays low energy costs in changing into the active conformation (PubMed:26150511). In addition to promote the production of type I interferons, plays a direct role in autophagy (PubMed:30568238, PubMed:30842662). Following cGAMP-binding, STING1 buds from the endoplasmic reticulum into COPII vesicles, which then form the endoplasmic reticulum-Golgi intermediate compartment (ERGIC) (PubMed:30842662). 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). 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). May be involved in translocon function, the translocon possibly being able to influence the induction of type I interferons (PubMed:18724357). May be involved in transduction of apoptotic signals via its association with the major histocompatibility complex class II (MHC-II) (By similarity). Involved in intercellular immune signaling. Cross-activated by 2',3'-cGAMP previously generated in virus-infected cells, triggers type I interferon signaling in macrophages and uninfected neighboring cells to propagate and amplify the antiviral immune response. (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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab227128 is the carrier-free version of ab181125.

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The stimulator of interferon genes (STING) also known as TMEM173 or MPYS is a critical transmembrane protein with a molecular weight of approximately 42 kDa. It is primarily expressed in the endoplasmic reticulum of various cell types including immune cells where it plays a central role in sensing cytosolic DNA. STING binds to cyclic dinucleotides produced by the enzyme cGAS upon recognition of aberrant DNA in the cytosol. This binding initiates activation and translocation of STING to the Golgi apparatus facilitating further signaling events.
Biological function summary	STING serves as a pivotal regulator in the innate immune response to viral and bacterial infections. It operates by forming a signaling complex with kinases and other effector proteins which subsequently leads to the activation of transcription factors such as IRF3 and NF-kB. These transcription factors then induce the expression of type I interferons and other cytokines important for mounting an effective antiviral response. The STING pathway therefore enhances the immune system's ability to detect and respond to pathogens.
Pathways	The activity of STING is integral to the cGAS-STING pathway a significant cytosolic DNA-sensing pathway involved in innate immunity. Upon activation STING interacts with TBK1 a kinase that further phosphorylates IRF3 promoting its nuclear translocation and activation. Beyond this STING also intersects with pathways involving autophagy a cellular process necessary for clearing pathogens and damaged cellular components. Through these pathways STING critically contributes to upholding cellular homeostasis and immune defense.
Associated diseases and disorders	The dysregulation of STING is linked to autoinflammatory diseases and certain cancers. Abnormal STING activation can lead to chronic inflammation a feature observed in diseases such as STING-associated vasculopathy with onset in infancy

(SAVI). STING's role in cancer is also notable where its ability to activate immune cells can be harnessed in immunotherapy yet its chronic activation may promote tumorigenesis. In cancer STING often interacts with proteins like K-Ras influencing tumor growth and response to therapies.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

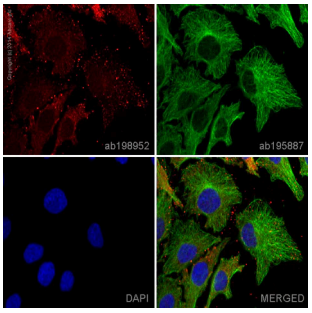
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

9 product images



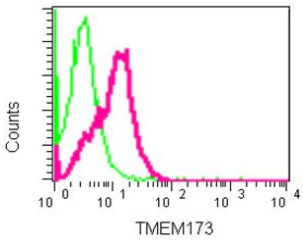
Immunocytochemistry/ Immunofluorescence - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-STING antibody

Clone EPR13130 (ab227128) has been successfully conjugated by Abcam. This image was generated using Anti-TMEM173 antibody [EPR13130] (Alexa Fluor® 647). Please refer to ab198952 for protocol details.
ab198952 staining TMEM173 in HeLa cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab198952 at 1/100 dilution (shown in red) and ab195887, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 488), at 1/250 dilution (shown in green). Nuclear DNA was labelled with DAPI (shown in blue).

Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

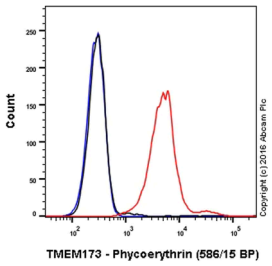
This product also gave a positive signal under the same testing conditions in HeLacells fixed with 4% formaldehyde (10 min).



Flow Cytometry (Intracellular) - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Flow Cytometry (Intracellular) staining using rabbit Anti-STING antibody

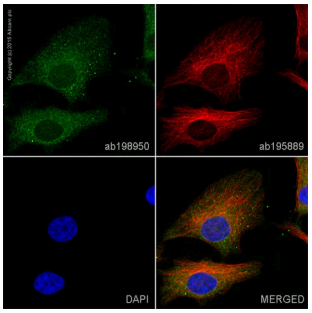
Intracellular Flow Cytometry analysis of THP1 cells using unpurified ab181125 at a 1/10 dilution (red) or a Rabbit monoclonal IgG (negative) (green). Goat anti rabbit IgG (FITC) secondary used at a 1/150 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab181125).



Flow Cytometry (Intracellular) - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Flow Cytometry (Intracellular) staining using rabbit Anti-STING antibody

Clone EPR13130 (ab227128) has been successfully conjugated by Abcam. This image was generated using Anti-TMEM173 antibody [EPR13130] (PE). Please refer to ab208874 for protocol details.
Overlay histogram showing HeLa cells stained with ab208874 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab208874 1/500 dilution) for 30 min at 22°C.Isotype control antibody (black line) was rabbit IgG (monoclonal) Phycoerythrin (ab209478) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control. Acquisition of >5000 events were collected using a 50 mW Yellow/Green laser (561nm) and 586/15 bandpass filter. This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Triton X-100 for 15 min used under the same conditions.

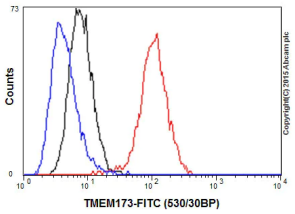


Immunocytochemistry/ Immunofluorescence - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-STING antibody

Clone EPR13130 (ab227128) has been successfully conjugated by Abcam. This image was generated using Anti-TMEM173 antibody [EPR13130] (Alexa Fluor® 488). Please refer to ab198950 for protocol details.
ab198950 staining TMEM173 in HeLa cells. The cells were fixed with 100% methanol (5min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab198950 at 1/200 dilution (shown in green) and ab195889, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 594), at 1/250 dilution (shown in red). Nuclear DNA was labelled with DAPI (shown in blue).

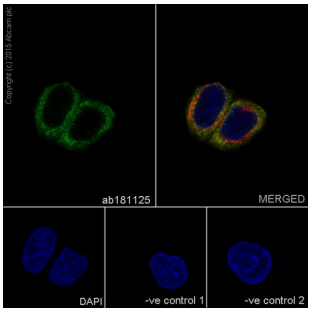
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Flow Cytometry (Intracellular) - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Flow Cytometry (Intracellular) staining using rabbit Anti-STING antibody

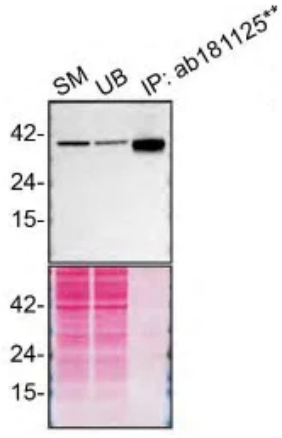
Overlay histogram showing THP-1 cells fixed in 4% PFA and stained with purified ab181125 at a dilution of 1 in 20 (red line). The secondary antibody used was FITC goat anti-rabbit at a dilution of 1 in 500. Rabbit monoclonal IgG was used as an isotype control (black line) and cells incubated in the absence of both primary and secondary antibody were used as a negative control (blue line). This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab181125).



Immunocytochemistry/ Immunofluorescence - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-STING antibody

Immunofluorescence staining of HeLa cells with purified ab181125 at a working dilution of 1/1000, counter-stained with DAPI. The secondary antibody was Alexa Fluor® 488 goat anti-rabbit (ab150077), used at a dilution of 1/1000. ab7291, a mouse anti-tubulin antibody (1/1000), was used to stain tubulin along with ab150120 (Alexa Fluor® 594 goat anti-mouse, 1/1000), shown in the top right hand panel. The cells were fixed in 4% PFA and permeabilized using 0.1% Triton X 100. The negative controls are shown in bottom middle and right hand panels - for negative control 1, purified ab181125 was used at a dilution of 1/500 followed by an Alexa Fluor® 594 goat anti-mouse antibody (ab150120) at a dilution of 1/500. For negative control 2, ab7291 (mouse anti-tubulin) was used at a dilution of 1/500 followed by an Alexa Fluor® 488 goat anti-rabbit antibody (ab150077) at a dilution of 1/400.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab181125).



Immunoprecipitation - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

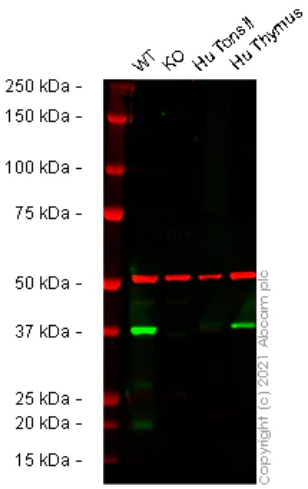
This data was developed using ab181125, the same antibody clone in a different buffer formulation.

Immunoprecipitation of STING1 in THP-1 cells. Lysates were prepared and immunoprecipitation was performed using 2 µg of ab181125 pre-coupled to Protein A beads. Samples were then washed and processed for western blot.

These data were provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.

All lanes:
Immunoprecipitation - Anti-STING antibody [EPR13130] (ab181125) at 2 µg

All lanes:
THP-1 cells



Western blot - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Western blot staining using rabbit Anti-STING antibody

False colour image of Western blot: Anti-STING antibody [EPR13130] staining at 1/1000 dilution, shown in green; loading control ab7291 (Mouse anti-Alpha Tubulin [DM1A]) at 1/20000 dilution, shown in red. In Western blot, ab181125 was shown to bind specifically to STING. A band was observed at 37 kDa in wild-type THP-1 cell lysates with no signal observed at this size in TMEM173 knockout cell line ab270493 (knockout cell lysate ab270516). To generate this image, wild-type and TMEM173 knockout THP-1 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab181125).

All lanes:
Western blot - Anti-STING antibody [EPR13130] (ab181125) at 1/1000 dilution

Lane 1:
Wild-type THP-1 cell lysate at 20 µg

Lane 2:
TMEM173 knockout THP-1 cell lysate at 20 µg

Lane 2:
Western blot - Human TMEM173 knockout THP-1 cell line (ab270493)

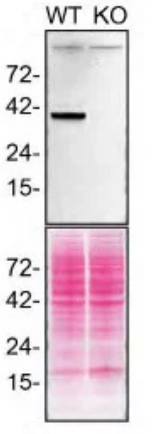
Lane 3:
Human Tonsil cell lysate at 20 µg

Lane 4:
Human Thymus cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 42 kDa

Observed band size: 37 kDa



Western blot - Anti-STING antibody [EPR13130] - BSA and Azide free (ab227128)

STING Western blot staining using rabbit Anti-STING antibody

This data was developed using ab181125, the same antibody clone in a different buffer formulation.

ab181125 was shown to react with STING1 in wild-type THP-1 cells in Western blot with loss of signal observed in STING1 knockout cell line ab270493. Wild-type THP-1 and STING1 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab181125 overnight at 4 °C at a 1/1000 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

These data were provided by YCharOS Inc., an open science company with the mission of

characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-STING antibody [EPR13130] (ab181125) at 1/1000 dilution

Lane 1:
Wild-type THP-1 lysate at 40 µg

Lane 2:
STING1 knock-out THP-1 lysate at 40 µg

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.