abcam

ab227705

Anti-STING antibody [SP339]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.6 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP339
Purification technique	Affinity purification Protein A/G
Concentration	0.314 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from TCS by protein A/G.

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/20 - 1/400
Notes	Primary incubation for 30 minutes at 4°C.

Predicted

Species	Pig, Cow
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/400
Notes	Primary incubation for 1 hour at room temperature.

Predicted

Species	Pig, Cow
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	Perform heat mediated antigen retrieval with EDTA buffer pH 8.0 before commencing with IHC staining protocol. Primary incubation for 10 minutes at room temperature.

Predicted

Species	Pig, Cow
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	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

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

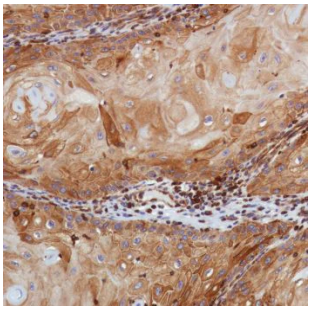
We do not recommend this combination. It is not covered by our product promise.

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.

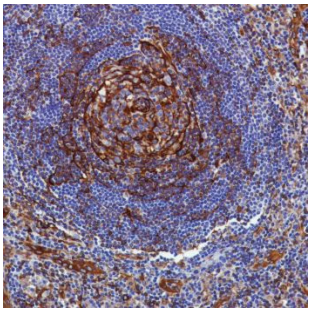
18 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

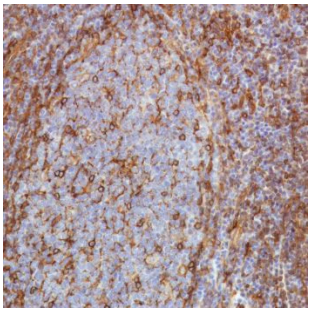
Formalin-fixed, paraffin-embedded human skin squamous cell carcinoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

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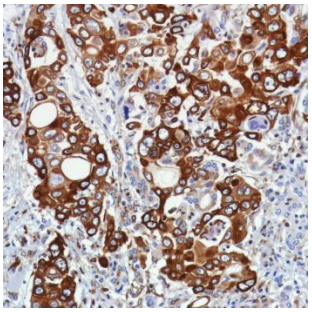
Formalin-fixed, paraffin-embedded human lymph node tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



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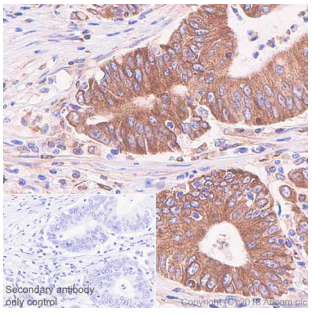
Formalin-fixed, paraffin-embedded human tonsil tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



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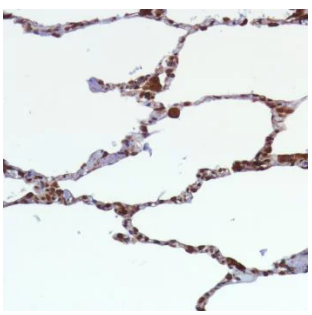
Formalin-fixed, paraffin-embedded human pancreatic adenocarcinoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



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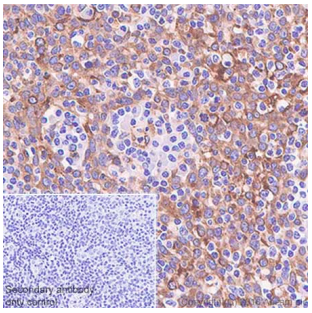
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human colon carcinoma tissue sections labeling TMEM173 with ab227705 at 1/100 dilution (2.5 µg/ml). Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10mins. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Hematoxylin was used as a counterstain. Positive staining on the human colon carcinoma, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab227705 for 10 mins at room temperature.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

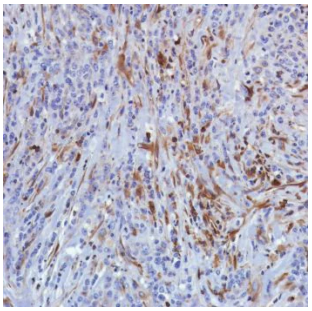
Formalin-fixed, paraffin-embedded human lung tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

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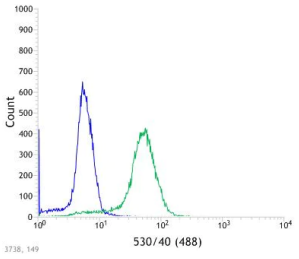
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human tonsil tissue sections labeling TMEM173 with ab227705 at 1/100 dilution (2.5 µg/ml). Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10mins. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Hematoxylin was used as a counterstain. Positive staining on the human tonsil, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab227705 for 10 mins at room temperature.



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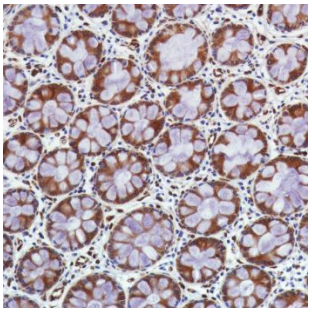
Formalin-fixed, paraffin-embedded human pancreatic adenocarcinoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Flow Cytometry (Intracellular) - Anti-STING antibody [SP339] (ab227705)

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

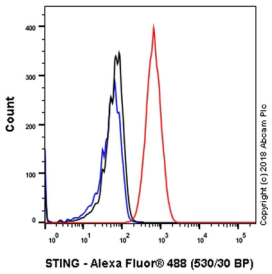
Flow cytometric analysis of THP-1 (human monocytic leukemia cell line) cell line labeling TMEM173 with ab227705 at 1/400 dilution (green) compared with a Rabbit IgG negative control (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

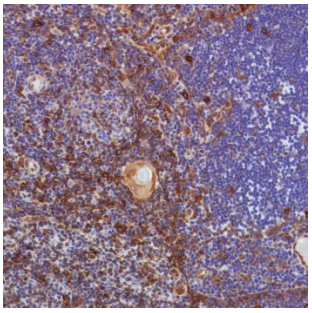
Formalin-fixed, paraffin-embedded human colon tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Flow Cytometry (Intracellular) - Anti-STING antibody [SP339] (ab227705)

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

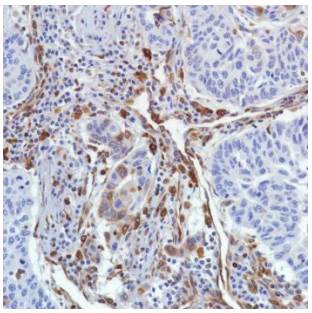
Flow cytometry analysis of THP-1 (human acute monocytic leukemia) labeling TMEM173 with purified ab227705 at 1/20 dilution (12.5 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) at 1/2000 dilution was used as a secondary antibody. Isotype control - Rabbit monoclonal IgG (ab172730) (Black). Unlableled control - Unlabelled cells (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

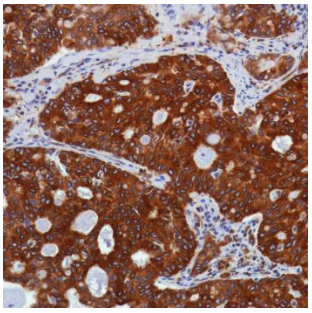
Formalin-fixed, paraffin-embedded human thymus tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

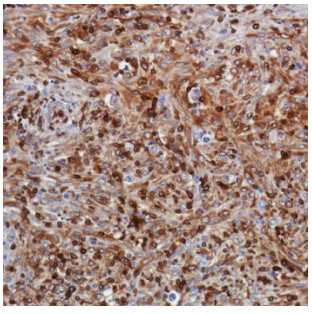
Formalin-fixed, paraffin-embedded human lung squamous cell carcinoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



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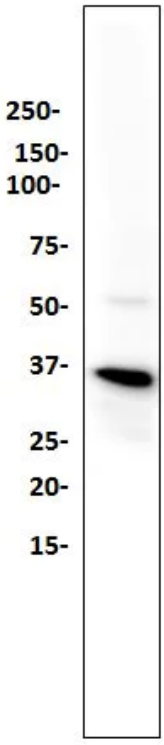
Formalin-fixed, paraffin-embedded human lung adenocarcinoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STING antibody [SP339] (ab227705)

STING Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STING antibody

Formalin-fixed, paraffin-embedded human HK lymphoma tissue stained for TMEM173 using ab227705 at 1/100 dilution in immunohistochemical analysis.

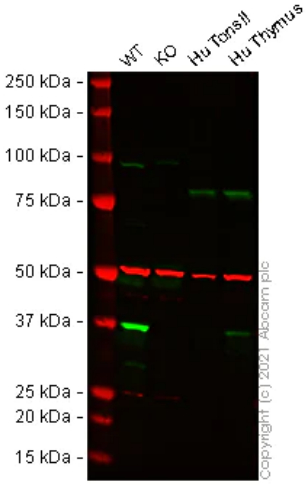


Western blot - Anti-STING antibody [SP339] (ab227705)

All lanes:
Western blot - Anti-STING antibody [SP339] (ab227705) at 1/400 dilution

All lanes:
THP-1 (human monocytic leukemia cell line) cell lysate

Predicted band size: 42 kDa



Western blot - Anti-STING antibody [SP339] (ab227705)

STING Western blot staining using rabbit Anti-STING antibody

Lanes 1 - 4: Merged signal (red and green). Green - ab227705 observed at 37 kDa. Red - loading control ab7291 (Mouse anti-Alpha Tubulin [DM1A]) observed at 55 kDa.
ab227705 was shown to react with TMEM173 in wild-type THP-1 cells in Western blot with loss of signal observed in TMEM173 knockout cell line ab270493 (TMEM173 knockout cell lysate ab270516). Wild-type THP-1 and TMEM173 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with ab227705 and ab7291 (Mouse anti-Alpha Tubulin [DM1A]) overnight at 4 °C at a 1 in 400 dilution and a 1 in 20000 dilution respectively. Blots were incubated with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-STING antibody [SP339] (ab227705) at 1/400 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)

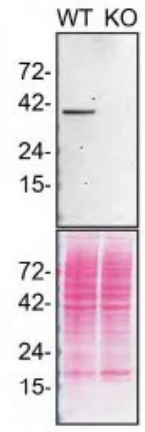
Lane 3:
Human Tonsil tissue lysate at 20 µg

Lane 4:
Human Thymus tissue lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 42 kDa

Observed band size: 37 kDa



Western blot - Anti-STING antibody [SP339] (ab227705)

STING Western blot staining using rabbit Anti-STING antibody

ab227705 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 ab227705 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 [SP339] (ab227705) 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'.