abcam

ab230262

Anti-Caveolin-1 antibody [E249] - 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	E249
Purification technique	Affinity purification Protein A
Specificity	This antibody should recognize both alpha and beta form of Caveolin-1.
Concentration	1.022 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse

Dilution info	-
Notes	Use 0.01M Sodium Citrate Buffer, pH 6.0. Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Species	Rat
Dilution info	-
Notes	Use 0.01M Sodium Citrate Buffer, pH 6.0. Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Species	Human
Dilution info	-
Notes	Use 0.01M Sodium Citrate Buffer, pH 6.0. Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Target data

See full target information CAV1

Function	May act as a scaffolding protein within caveolar membranes (PubMed:11751885). Forms a stable heterooligomeric complex with CAV2 that targets to lipid rafts and drives caveolae formation. Mediates the recruitment of CAVIN proteins (CAVIN1/2/3/4) to the caveolae (PubMed:19262564). Interacts directly with G-protein alpha subunits and can functionally regulate their activity (By similarity). Involved in the costimulatory signal essential for T-cell receptor (TCR)-mediated T-cell activation. Its binding to DPP4 induces T-cell proliferation and NF-kappa-B activation in a T-cell receptor/CD3-dependent manner (PubMed:17287217). Recruits CTNNB1 to caveolar membranes and may regulate CTNNB1-mediated signaling through the Wnt pathway (By similarity). Negatively regulates TGFB1-mediated activation of SMAD2/3 by mediating the internalization of TGFBR1 from membrane rafts leading to its subsequent degradation (PubMed:25893292). Binds 20(S)-hydroxycholesterol (20(S)-OHC) (By similarity).

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

ab230262 is the carrier-free version of ab32577.

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.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Species reactivity
Rat: We have preliminary internal testing data to indicate this antibody may not react with this species.
Please contact us for more information.

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	Caveolin-1 also known as Cav-1 is an integral membrane protein with a molecular weight of approximately 22 kDa. It functions mechanically as a scaffolding protein in caveolae which are tiny invaginations in the plasma membrane of many cell types. These structures are particularly abundant in adipocytes endothelial cells and muscle cells. Caveolin-1 anchors itself to the cell membrane and plays a role in organizing and concentrating certain signaling molecules.
Biological function summary	Caveolae provide a platform for various signaling pathways and involve caveolin-1 as a major component. Caveolin-1 interacts with multiple signaling molecules such as G-protein coupled receptors and Src family kinases to modulate signal transduction. This protein forms part of a larger caveolar complex contributing to cellular processes including endocytosis and lipid regulation. Its presence as a marker in caveolae highlights its significance in cellular functions.

Pathways	Caveolin-1 influences the insulin signaling and nitric oxide (NO) signaling pathways. In the insulin signaling pathway caveolin-1 interacts with insulin receptors to modulate glucose uptake. It also associates with eNOS (endothelial nitric oxide synthase) in the NO signaling pathway impacting vascular function. These relationships highlight its role in cellular communication and regulatory mechanisms within the human body.
Associated diseases and disorders	Caveolin-1 is involved in cancer and cardiovascular diseases. In cancer altered expression of caveolin-1 contributes to tumor progression while in cardiovascular diseases it affects endothelial function through its interaction with eNOS. The connection of caveolin-1 to proteins like insulin receptors and eNOS reveals its critical influence in these conditions providing potential targets for therapeutic intervention.

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

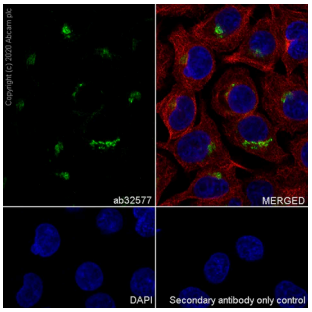
We do not recommend this combination. It is not covered by our product promise.

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.

10 product images

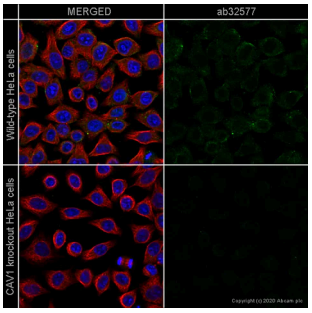


Immunocytochemistry/ Immunofluorescence - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caveolin-1 antibody

This data was developed using ab32577, the same antibody clone in a different buffer formulation.

Immunocytochemistry analysis of Jurkat (Human lung carcinoma epithelial cell) cells labeling Caveolin-1 with purified ab32577 at 1/50 dilution (2.3 µg/mL). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL). Goat anti rabbit IgG (Alexa Fluor® 488, ab150078) was used as the secondary antibody at 1/1000 (2 µg/mL) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.

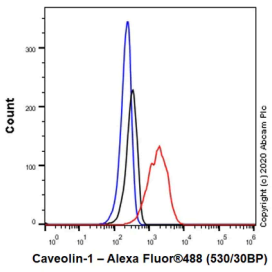


Immunocytochemistry/ Immunofluorescence - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caveolin-1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab32577).
ab32577 staining Caveolin-1 in wild-type HeLa cells (top panel) and CAV1 knockout HeLa cells (ab255371) (bottom panel). The cells were fixed with 100% methanol (5 min) then 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 with ab32577 at 1/200 dilution and ab7291 (Mouse monoclonal to alpha Tubulin) at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat secondary antibody to rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green) and a goat secondary antibody to mouse IgG (Alexa Fluor® 594) (ab150120) at 2 µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.

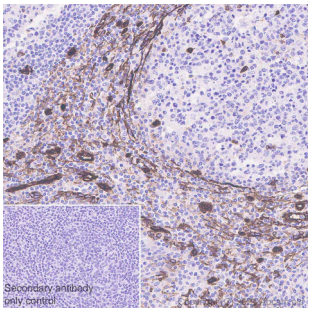
Image was taken with a confocal microscope (Leica-Microsystems TCS SP8).



Flow Cytometry - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Flow Cytometry staining using rabbit Anti-Caveolin-1 antibody

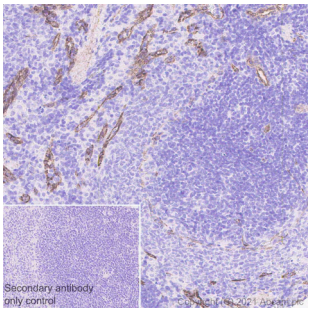
This data was developed using ab32577 the same antibody clone in a different buffer formulation. Flow cytometric analysis of 4% Paraformaldehyde fixed 90% Methanol permeabilized A431(Human epidermoid carcinoma epithelial cell) cells labelling Caveolin-1 with ab32577 at 1/20 dilution (10 µg/ml) compared with a Rabbit monoclonal IgG (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Caveolin-1 antibody

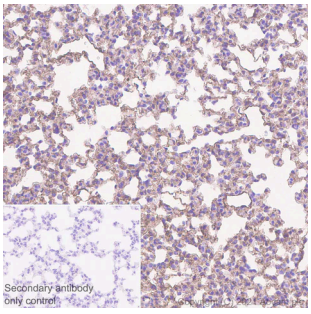
This data was developed using ab32577, the same antibody clone in a different buffer formulation. Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human tonsil tissue sections labelling Caveolin-1 with purified ab32577 at 1/2000 dilution (0.06 µg/ml). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) . Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Caveolin-1 antibody

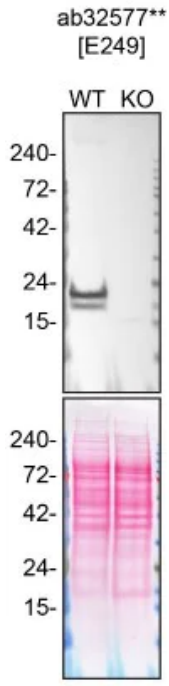
This data was developed using ab32577, the same antibody clone in a different buffer formulation. Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat spleen tissue sections labeling Caveolin-1 with purified ab32577 at 1/2000 dilution (0.06 µg/ml). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) . Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Caveolin-1 antibody

This data was developed using ab32577, the same antibody clone in a different buffer formulation. Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse lung tissue sections labeling Caveolin-1 with purified ab32577 at 1/2000 dilution (0.06 µg/ml). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) . Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.



Western blot - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Western blot staining using rabbit Anti-Caveolin-1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab32577)

ab230262 was shown to react with CAV1 in wild-type U-87 MG cells in Western blot with loss of signal observed in CAV1 knockout cell line ab306811. Wild-type U-87 MG and CAV1 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab32577 overnight at 4 °C at a 1/1000 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

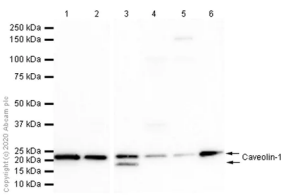
This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-Caveolin-1 antibody [E249] - Caveolae Marker (ab32577)

Lane 1:
Wild-type U-87 MG lysate at 20 µg

Lane 2:
CAV1 knock-out U-87 MG lysate at 20 µg

Lane 2:
Western blot - Human CAV1 knockout U-87 MG cell line (ab306811)

Observed band size: 20-22 kDa



Western blot - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Western blot staining using rabbit Anti-Caveolin-1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab32577).
The two isoforms of Caveolin-1 have been described in the literatures (PMID: 12816877, 11748292 and 14992406). We are unsure about the nature of the 250kDa bands.

All lanes:
Western blot - Anti-Caveolin-1 antibody [E249] - Caveolae Marker (ab32577) at 1/1000 dilution

Lane 1:
Mouse heart lysate at 20 µg

Lane 2:
Mouse skeletal muscle lysate at 20 µg

Lane 3:
Rat heart lysate at 20 µg

Lane 4:
Rat skeletal muscle lysate at 20 µg

Lane 5:
C2C12 (Mouse myoblasts myoblast) whole cell lysate at 20 µg

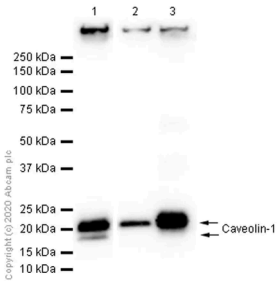
Lane 6:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 20 kDa

Observed band size: 17 kDa, 23 kDa



Western blot - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Western blot staining using rabbit Anti-Caveolin-1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab32577).
The two isoforms of Caveolin-1 have been described in the literatures (PMID: 12816877, 11748292 and 14992406). We are unsure about the nature of the 250kDa bands.

All lanes:
Western blot - Anti-Caveolin-1 antibody [E249] - Caveolae Marker (ab32577) at 1/1000 dilution

Lane 1:
A431 (Human epidermoid carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 20 µg

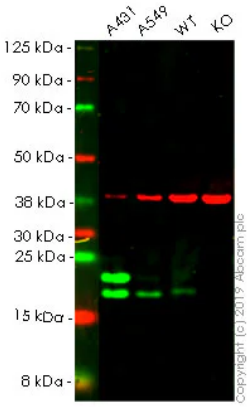
Lane 3:
HaCaT (Human skin keratinocyte) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 20 kDa

Observed band size: 17 kDa, 23 kDa



Western blot - Anti-Caveolin-1 antibody [E249] - BSA and Azide free (ab230262)

Caveolin-1 Western blot staining using rabbit Anti-Caveolin-1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab32577).
Lanes 1 - 4: Merged signal (red and green). Green - ab32577 observed at 20 kDa. Red - loading control, ab8245 observed at 37 kDa.

ab32577 was shown to react with Caveolin-1 in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab255371 (knockout cell lysate ab263806) was used. Wild-type and Caveolin-1 knockout samples were subjected to SDS-PAGE. ab32577 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 dilution and 1 in

20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-Caveolin-1 antibody [E249] - Caveolae Marker (ab32577) at 1/1000 dilution

Lane 1:
A431 cell lysate at 20 µg

Lane 2:
A549 cell lysate at 20 µg

Lane 3:
Wild-type HeLa cell lysate at 20 µg

Lane 4:
Western blot - Human CAV1 (Caveolin-1) knockout HeLa cell lysate (ab263806) at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 20 kDa

Observed band size: 20 kDa, 37 kDa

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