abcam

ab2912

Anti-Caveolin-3 antibody - Caveolae Marker

Lab Essentials

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 0.1% BSA
Form	Liquid
Clonality	Polyclonal
Immunogen	Synthetic Peptide within Mouse Cav3 aa 1-50. The exact immunogen used to generate this antibody is proprietary information. Database link P51637
Purification technique	Affinity purification Immunogen
Specificity	This antibody does not detect caveolin-1 or -2.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Antigen affinity chromatography.

Reactivity data

ICC/IF

Tested

Species	Mouse
Dilution info	1/20
Notes	-

Species	Human
Dilution info	1/20
Notes	-

Expected

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

Predicted

Species	Sheep
Dilution info	-
Notes	-

IP

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Sheep
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	3-5 µg for 10^5 Cells
Notes	-

Expected

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

Predicted

Species	Sheep
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1-3 µg/mL
Notes	-

Species	Rat
Dilution info	1-3 µg/mL
Notes	-

Species	Human
Dilution info	1-3 µg/mL
Notes	-

Predicted

Species	Sheep
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/100 - 1/200
Notes	-

Expected

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

Predicted

Species	Sheep
Dilution info	-
Notes	-

IHC-Fr

Expected

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

Target data

See full target information CAV3

Function	May act as a scaffolding protein within caveolar membranes. Interacts directly with G-protein alpha subunits and can functionally regulate their activity. May also regulate voltage-gated potassium channels. Plays a role in the sarcolemma repair mechanism of both skeletal muscle and cardiomyocytes that permits rapid resealing of membranes disrupted by mechanical stress (By similarity). Mediates the recruitment of CAVIN2 and CAVIN3 proteins to the caveolae (PubMed:19262564).

Storage

Shipped at conditions	Blue Ice
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	Caveolin-3 also referred to as 'caveolin' 'caveolae' and 'CAV3' is a protein with an approximate mass of 17 kDa. It acts as a structural component of caveolae small invaginations in the plasma membrane. Caveolin-3 is expressed majorly in muscle cells including cardiac skeletal and smooth muscle tissues. As a distinguishing marker for caveolae it plays an essential role in the formation and stabilization of these structures.
Biological function summary	Caveolae perform vital functions in cellular signaling and endocytosis. Caveolin-3 assists in various signaling pathways within muscle cells and interacts with other caveolae markers to facilitate signal transduction. It often forms a complex with other caveolin proteins such as caveolin-1 creating an environment conducive for the embedding of signaling molecules. This protein also modulates the trafficking and function of certain ion channels and receptors impacting muscle physiology.
Pathways	Caveolin-3 significantly influences pathways concerned with muscle function and signal transduction. In particular it involves itself with the nitric oxide (NO) signaling pathway and beta-adrenergic signaling both critical to the contractile functions of muscle tissues. It closely interacts with proteins such as endothelial nitric oxide synthase (eNOS) and components of the G-protein coupled receptor family indicating its pivotal role in mediating physiological responses to stimuli.

Associated diseases and disorders	Caveolin-3 mutations have been associated with a range of muscle-related disorders including limb-girdle muscular dystrophy and hypertrophic cardiomyopathy. These conditions often arise due to alterations in muscle cell signaling and integrity. Caveolin-3 also shares connections with proteins like dystrophin an important player in maintaining muscle cell structure and its dysfunction can exacerbate these muscular disorders. Understanding these interactions offers insights into potential therapeutic targets for managing related pathologies.

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

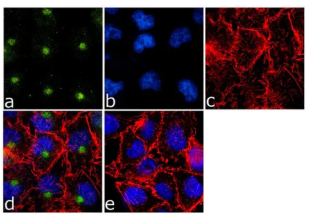
We do not recommend this combination. It is not covered by our product promise.

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

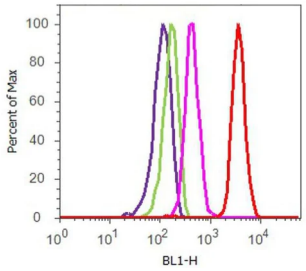


Immunocytochemistry/ Immunofluorescence - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caveolin-3 antibody

Immunocytochemistry/Immunofluorescence analysis of 70% confluent log phase A-375 cells. Cells were fixed with 4% paraformaldehyde for 15 minutes, permeabilized with 0.25% Triton X-100 for 10 minutes, and blocked with 5% BSA for 1 hour at room temperature. Samples were incubated with ab2912 at 1µg/ml in 1% BSA for 3 hours at room temperature and then labelled with Alexa Fluor® 488-conjugated goat anti-rabbit IgG (H+L) at a dilution of 1/2000 for 45 minutes at room

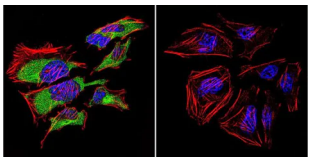
temperature (panel a: green). Nuclei (panel b: blue) were stained with DAPI. F-actin (panel c: red) was stained with Alexa Fluor® 555 Rhodamine Phalloidin (1/300). Panel d is a merged image showing cytoplasmic localization. Panel e is a no primary antibody control. The images were captured at 60X magnification.



Flow Cytometry - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 Flow Cytometry staining using rabbit Anti-Caveolin-3 antibody

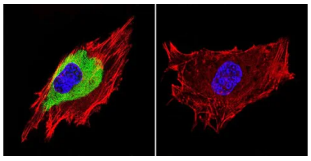
Flow cytometry analysis of U-87 MG cells. Cells were fixed with 70% ethanol for 10 minutes, permeabilized with 0.25% Triton X-100 for 20 minutes, and blocked with 5% BSA for 30 minutes at room temperature. Cells were labeled with ab2912 (red histogram) or with rabbit isotype control (pink histogram) at 3-5 ug/million cells in 2.5% BSA. After incubation at room temperature for 2 hours, the cells were labeled with Alexa Fluor® 488-conjugated goat anti-rabbit secondary antibody at a dilution of 1/400 for 30 minutes at room temperature. The purple histogram represents unstained control cells and the green histogram represents no-primary-antibody control.



Immunocytochemistry/ Immunofluorescence - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caveolin-3 antibody

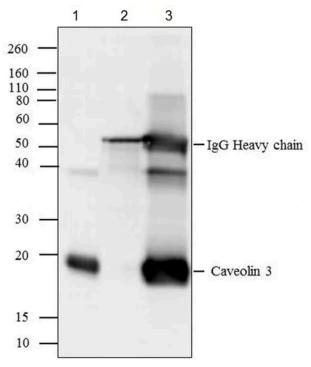
Immunocytochemistry analysis of Caveolin-3 in HeLa Cells. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) (right panel) or with ab2912 at a dilution of 1/20 overnight at 4°C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody. Caveolin-3 staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Images were taken at 60X magnification.



Immunocytochemistry/ Immunofluorescence - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caveolin-3 antibody

Immunocytochemistry analysis of Caveolin-3 in C2C11 Cells. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) (right panel) or with ab2912 at a dilution of 1/20 overnight at 4 C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody. Caveolin-3 staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Images were taken at 60X magnification.

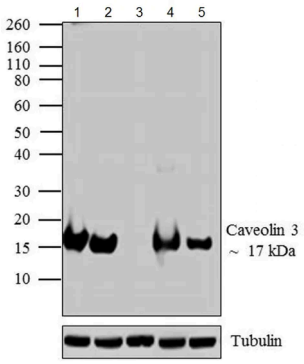


Immunoprecipitation - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 was immunoprecipitated using 5 µg of ab2912 from mouse heart tissue lysate (Lane 3) using the protein A beads. Normal rabbit IgG was used as a isotype control (Lane 2). 10% input represents the cell extract used for immunoprecipitation (Lane 1). Western blot analysis was performed using ab2912 and HRP-conjugated goat anti-rabbit IgG (H+L) at a dilution of 1/2500. Chemiluminescent detection was performed.
All lanes:

Immunoprecipitation - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Predicted band size: 17 kDa



Western blot - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Blocked with 5% skimmed milk.
All lanes:
Western blot - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Lane 1:
Rat heart tissue lysate at 20 µg

Lane 2:
Mouse heart tissue lysate at 20 µg

Lane 3:
HEK293 cell lysate at 20 µg

Lane 4:
Rat skeletal muscle tissue lysate at 20 µg

Lane 5:
Mouse muscle tissue lysate at 20 µg

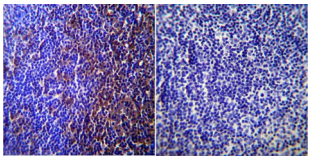
Secondary

All lanes:
HRP-conjugated goat anti-rabbit IgG (H+L) at 1/2500 dilution

Developed using the ECL technique.

Predicted band size: 17 kDa

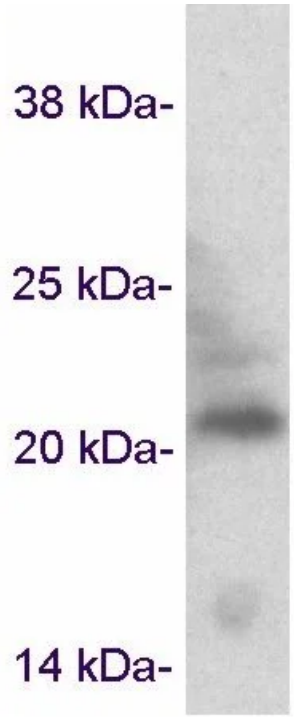
Observed band size: 17 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Caveolin-3 antibody

Immunohistochemistry was performed on normal biopsies of deparaffinized mouse lymph node tissue. To expose target proteins heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1/200 with a rabbit polyclonal antibody recognizing Caveolin-3 ab2912 or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Western blot - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

All lanes:
Western blot - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

All lanes:
Rat cardiac muscle tissue lysate

Predicted band size: 17 kDa

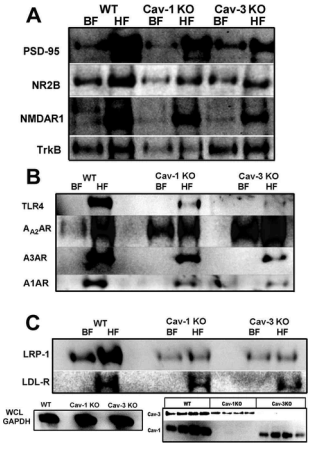


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Western blot - Anti-Caveolin-3 antibody - Caveolae Marker (ab2912)

Caveolin-3 western blot using anti-Caveolin-3 antibody - Caveolae Marker ab2912. Publication image and figure legend from Niesman, I. R., Schilling, J. M., et al., 2014, J Neuroinflammation, PubMed 24593993.

ab2912 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab2912 please see the product overview.

Caveolin (Cav)-1 knock-out (KO) and Cav-3 KO mice have altered expression and membrane/lipid raft (MLR) localization of key neuronal and glial proteins. Sucrose density fractionation (SDF) and Western blot (WB) of wild-type (WT), Cav-1 KO, and Cav-3 KO brains. Buoyant fractions (BF) contain the cholesterol and sphingolipid enriched MLR, while heavy farctions (HF) contain non-MLR cellular components. (A) WB detection of PSD-95, NR2B, NR1 and TrkB expression in BF and HF. (B) WB detection of toll-like receptor-4 (TLR4), AA2AR, A3AR, and A1AR expression in BF and HF. (C) WB detection of LRP-1 and LDL-R expression in BF and HF. Bottom left, WB analysis of GAPDH in whole cell lysates (WCL) from which SDF were generated for each group. Bottom right, WB shows loss of Cav-1 and Cav-3 protein expression in the transgenic mouse used in the present study.

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