abcam

ab32330

Anti-Caldesmon/CDM antibody [E89]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	E89
Purification technique	Affinity purification Protein A
Dissociation constant	1.25 x 10^{-10} M
Concentration	0.132 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse
Dilution info	1/100
Notes	

	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/100
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/100
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Mouse
Dilution info	1/50
Notes	**For unpurified use at 1/250 - 1/500.**

Species	Human
Dilution info	1/50
Notes	**For unpurified use at 1/250 - 1/500.**

Expected

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

IP

Tested

Species	Mouse
Dilution info	1/20
Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/10000 - 1/20000
Notes	-

Species	Rat
Dilution info	1/10000 - 1/20000
Notes	-

Species	Human
Dilution info	1/10000 - 1/20000
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/20
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Target data

See full target information CALD1

Function	Actin- and myosin-binding protein implicated in the regulation of actomyosin interactions in smooth muscle and nonmuscle cells (could act as a bridge between myosin and actin filaments). Stimulates actin binding of tropomyosin which increases the stabilization of actin filament structure. In muscle tissues, inhibits the actomyosin ATPase by binding to F-actin. This inhibition is attenuated by calcium-calmodulin and is potentiated by tropomyosin. Interacts with actin, myosin, two molecules of tropomyosin and with calmodulin. Also plays an essential role during cellular mitosis and receptor capping. Involved in Schwann cell migration during peripheral nerve regeneration (By similarity).

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

Notes

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.

Supplementary info

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

Activity summary	Caldesmon also known as CDM CALD1 and h-caldesmon is a cytoskeletal protein with a molecular mass of approximately 93 to 120 kDa. This protein expresses itself abundantly in smooth muscle tissues yet it can also be found in non-muscle cells like fibroblasts and endothelial cells. Researchers often use specific caldesmon antibodies in immunohistochemistry allowing them to label various cellular components and providing insights into tissue composition. Due to its presence in muscle tissues caldesmon is essential for understanding muscle physiology and pathology.
Biological function summary	Caldesmon interacts with actin and myosin to regulate actomyosin contractility. This protein plays a critical role in controlling the contraction and relaxation processes in smooth muscle cells. Caldesmon forms part of a complex that includes calmodulin and tropomyosin enhancing its ability to stabilize actin filaments. It functions by inhibiting the ATPase activity of myosin therefore influencing cellular motility and shape change mechanisms. Researchers continually study caldesmon to comprehend its interactome and its significance within the larger cellular structure.
Pathways	Caldesmon participates in the regulation of the cytoskeletal dynamics vital for cell motility and structural integrity. In particular it is an important component of the contraction-relaxation cycle pathway in smooth muscle tissues. This protein has connections with pathways involving RhoA-Rho kinase where caldesmon modulates the phosphorylation levels influencing muscle contraction. Additionally proteins like tropomyosin and calmodulin modulate its activity especially under calcium-calmodulin-dependent pathways which further elucidates its regulatory importance.
Associated diseases and disorders	Caldesmon has associations with conditions like certain types of cancers and cardiovascular diseases. Its expression levels and distribution provide valuable information in identifying smooth muscle tumors and other pathological conditions. In oncology for example h-caldesmon serves as a marker to distinguish leiomyosarcomas from other tumors. Moreover due to its involvement in smooth muscle contractility caldesmon links with proteins such as calmodulin and tropomyosin in diseases where abnormal contraction and cellular motility play significant roles. Understanding these connections is important for developing targeted treatments and improving diagnostic accuracy.

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.

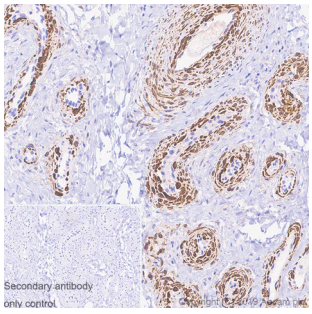
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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

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Terms & Conditions.

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9 product images

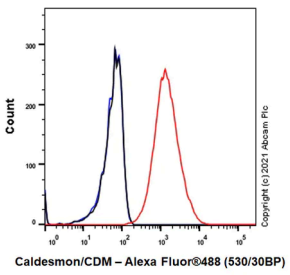


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caldesmon/CDM antibody [E89] (ab32330)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human leiomyoma tissue sections labeling Caldesmon/CDM with purified ab32330 at 1/100 dilution (1.21 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.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument

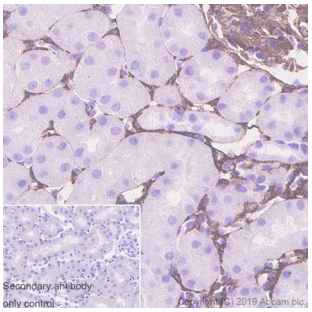
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Flow Cytometry (Intracellular) - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Caldesmon/CDM Flow Cytometry (Intracellular) staining using rabbit Anti-Caldesmon/CDM antibody

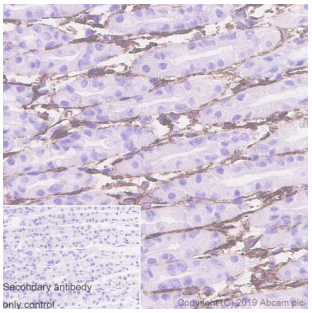
Intracellular Flow Cytometry analysis of NIH/3T3 (Mouse embryonic fibroblast) cells labelling Caldesmon/CDM with purified ab32330 at 1/20 dilution (10 µg/mL) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caldesmon/CDM antibody [E89] (ab32330)

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

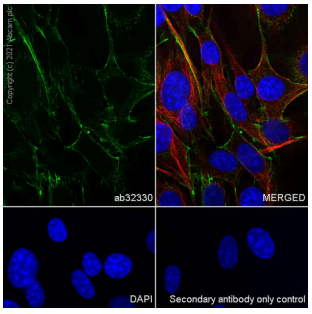
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse kidney tissue sections labeling Caldesmon/CDM with purified ab32330 at 1/100 dilution (1.21 µg/mL). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval 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.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Caldesmon/CDM antibody [E89] (ab32330)

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

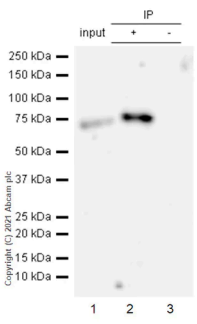
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat stomach tissue sections labeling Caldesmon/CDM with purified ab32330 at 1/100 dilution (1.21 µg/mL). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 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.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument



Immunocytochemistry/ Immunofluorescence - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Caldesmon/CDM Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Caldesmon/CDM antibody

Immunocytochemistry analysis of NIH/3T3 (Mouse embryonic fibroblast) cells labeling Caldesmon/CDM with purified ab32330 at 1/50 dilution (2.4 µg/mL). Cells were fixed in 100% Methanol 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, ab150077) 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.



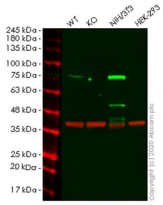
Immunoprecipitation - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Purified ab32330 at 1/20 dilution (0.6µg) immunoprecipitating Caldesmon/CDM in NIH/3T3 whole cell lysate.
Lane 1 (input): NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate.
Lane 2 (+): ab32330 + NIH/3T3 whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab32330 in NIH/3T3 whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/1000 dilution) was used for Western blotting.

Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
All lanes:
Immunoprecipitation - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Predicted band size: 93 kDa

Observed band size: 70 kDa



Western blot - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Caldesmon/CDM Western blot staining using rabbit Anti-Caldesmon/CDM antibody

Lanes 1-4: Merged signal (red and green). Green - ab32330 observed at 75 kDa. Red - loading control ab8245 observed at 36 kDa.
ab32330 Anti-Caldesmon/CDM antibody [E89] was shown to specifically react with Caldesmon/CDM in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab265026 (knockout cell lysate ab257375) was used. Wild-type and Caldesmon/CDM knockout samples were subjected to SDS-PAGE. ab32330 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-Caldesmon/CDM antibody [E89] (ab32330) at 1/1000 dilution

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

Lane 2:
CALD1 knockout HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human CALD1 (Caldesmon/CDM) knockout HeLa cell lysate (ab257375) at 20 µg

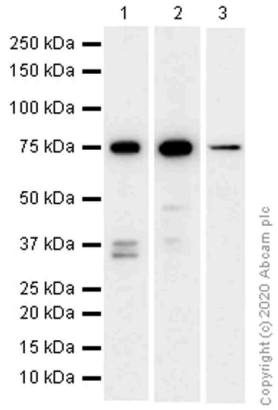
Lane 3:
NIH/3T3 cell lysate at 20 µg

Lane 4:
HEK-293 cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/10000 dilution

Predicted band size: 93 kDa



Western blot - Anti-Caldesmon/CDM antibody [E89] (ab32330)

All lanes:
Western blot - Anti-Caldesmon/CDM antibody [E89] (ab32330) at 1/10000 dilution

Lane 1:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Lane 2:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 15 µg

Lane 3:
Rat liver lysate at 15 µg

Secondary

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

Predicted band size: 93 kDa

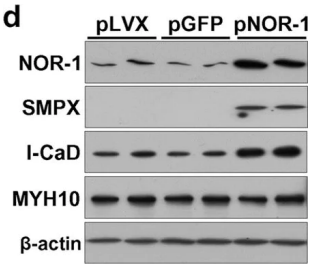


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Western blot - Anti-Caldesmon/CDM antibody [E89] (ab32330)

Caldesmon/CDM Western blot staining using rabbit Anti-Caldesmon/CDM antibody

Caldesmon/CDM western blot using anti-Caldesmon/CDM antibody [E89] ab32330. Publication image and figure legend from Ferrán, B., Martí-Pàmies, I., et al., 2016, Sci Rep, PubMed 27181368.

ab32330 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 ab32330 please see the product overview.

Lentiviral NOR-1 over-expression induces phenotypic changes in human VSMC and up-regulates SMPX.VSMC were transduced with lentiviral vectors to over-express NOR-1 (pLVX/NOR-1; pNOR-1), a FLAG-tagged derivative form of NOR-1 (pLVX/NOR-1-FLAG; pNOR-1F) or with control lentiviral vectors (pLVX or the EGFP expression vector [pLVX/EGFP; pGFP]). (a) Immunofluorescence microscopy analysis showing FLAG-tagged NOR-1 (green), filamentous actin (F-actin stained with phalloidin, red) and nuclei (Hoechst stain, blue). (b) Expression levels (analyzed by real-time PCR) of a panel of genes related to cell shape/morphology encoding for cytoskeleton and cytoskeletal-associated proteins in control cells (white bars) and cells transduced with pNOR-1F (black bars): ACTA2 (smooth muscle α-2 actin), MYH10 (myosin heavy chain 10), TPM1 (tropomyosin 1), TAGLN (transgelin), CALD1(1) (caldesmon transcript specific for smooth muscle cells), CALD1(2) (caldesmon transcript ubiquitously expressed, encoding for a light form of the protein [l-CaD]), ACTB (β-actin), PXN (paxillin) and SMPX (small muscle protein, X-linked) (n = 6). *p < 0.0001 vs. cells transduced with pGFP. (c) CALD1(2) and SMPX mRNA levels in VSMC transduced with pNOR-1 or with control lentiviral vectors. Data were normalized as in (b) (n = 6). *p < 0.0001 vs. cells transduced with pLVX. (d) Representative Western blot showing protein levels of NOR-1, SMPX, l-CaD, MYH10 and β-actin in VSMC over-expressing NOR-1 and control cells (n = 4).

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