abcam

ab109412

Anti-Calcineurin A antibody [EPR1670(2)]

Recombinant | RabMAb | KO Validated

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	EPR1670(2)
Purification technique	Affinity purification Protein A
Concentration	0.3 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/10000 - 1/50000
Notes	-

Species	Human
Dilution info	1/10000 - 1/50000
Notes	-

Species	Rat
Dilution info	1/10000 - 1/50000
Notes	-

IHC-P

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Expected

Species	Mouse
Dilution info	1/100 - 1/250
Notes	-

Species	Rat
Dilution info	1/100 - 1/250
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Species	Rat
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information PPP3CA

Function	Calcium-dependent, calmodulin-stimulated protein phosphatase which plays an essential role in the transduction of intracellular Ca(2+)-mediated signals (PubMed:15671020, PubMed:18838687, PubMed:19154138, PubMed:23468591, PubMed:30254215). Many of the substrates contain a PxIxIT motif and/or a LxVP motif (PubMed:17498738, PubMed:17502104, PubMed:22343722, PubMed:23468591, PubMed:27974827). In response to increased Ca(2+) levels, dephosphorylates and activates phosphatase SSH1 which results in cofilin dephosphorylation (PubMed:15671020). In response to increased Ca(2+) levels following mitochondrial depolarization, dephosphorylates DNM1L inducing DNM1L translocation to the mitochondrion (PubMed:18838687). Positively regulates the CACNA1B/CAV2.2-mediated Ca(2+) release probability at hippocampal neuronal soma and synaptic terminals (By similarity).

Dephosphorylates heat shock protein HSPB1 (By similarity). Dephosphorylates and activates transcription factor NFATC1 (PubMed:19154138). In response to increased Ca(2+) levels, regulates NFAT-mediated transcription probably by dephosphorylating NFAT and promoting its nuclear translocation (PubMed:26248042). Dephosphorylates and inactivates transcription factor ELK1 (PubMed:19154138). Dephosphorylates DARPP32 (PubMed:19154138). May dephosphorylate CRTC2 at 'Ser-171' resulting in CRTC2 dissociation from 14-3-3 proteins (PubMed:30611118). Dephosphorylates transcription factor TFEB at 'Ser-211' following Coxsackievirus B3 infection, promoting nuclear translocation (PubMed:33691586). Required for postnatal development of the nephrogenic zone and superficial glomeruli in the kidneys, cell cycle homeostasis in the nephrogenic zone, and ultimately normal kidney function (By similarity). Plays a role in intracellular AQP2 processing and localization to the apical membrane in the kidney, may thereby be required for efficient kidney filtration (By similarity). Required for secretion of salivary enzymes amylase, peroxidase, lysozyme and sialic acid via formation of secretory vesicles in the submandibular glands (By similarity). Required for calcineurin activity and homosynaptic depotentiation in the hippocampus (By similarity). Required for normal differentiation and survival of keratinocytes and therefore required for epidermis superstructure formation (By similarity). Positively regulates osteoblastic bone formation, via promotion of osteoblast differentiation (By similarity). Positively regulates osteoclast differentiation, potentially via NFATC1 signaling (By similarity). May play a role in skeletal muscle fiber type specification, potentially via NFATC1 signaling (By similarity). Negatively regulates MAP3K14/NIK signaling via inhibition of nuclear translocation of the transcription factors RELA and RELB (By similarity). Required for antigen-specific T-cell proliferation response (By similarity). Dephosphorylates KLHL3, promoting the interaction between KLHL3 and WNK4 and subsequent degradation of WNK4 (PubMed:30718414). Negatively regulates SLC9A1 activity (PubMed:31375679).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

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	Calcineurin A also known as PPP3CA is a highly specific protein phosphatase with a pivotal role in cellular signaling. It has a molecular mass of approximately 59 to 61 kDa depending on the isoform. Calcineurin A expression occurs in various tissues including the brain immune cells and cardiac tissues. It acts as the catalytic subunit of the enzyme calcineurin and is important for its function.
Biological function summary	Calcineurin A participates in numerous cellular processes through its phosphatase activity. As part of the calcineurin complex which includes a regulatory subunit it modulates the dephosphorylation of target proteins. This activity enables Calcineurin A to influence activation of T-lymphocytes by dephosphorylating the nuclear factor of activated T-cells (NFAT) a transcription factor responsible for immune response. Calcineurin A also plays a role in neuronal signaling and muscle function.
Pathways	Calcineurin A engages in the calcium signaling pathway which is vital for diverse cellular functions. It is related to proteins like calmodulin which binds calcium ions to activate Calcineurin A. Another important pathway includes the MAPK signaling pathway where Calcineurin A influences various cellular outcomes by regulating different transcription factors. Through these pathways Calcineurin A integrates signals that affect cellular growth survival and differentiation.
Associated diseases and disorders	Calcineurin A is associated with cardiac hypertrophy and immunosuppressive conditions. In cardiac hypertrophy aberrant Calcineurin A activity leads to changes in heart muscle size and function. The protein also connects to the disorder of immunosuppression through its inhibition by drugs like cyclosporine which are used to prevent transplant rejection by targeting Calcineurin A. This inhibition blocks T-cell activation and provides therapeutic benefits in managing transplant patients.

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.

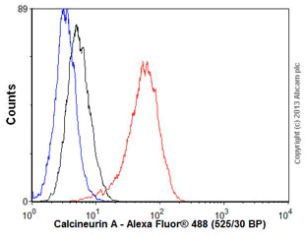
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In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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

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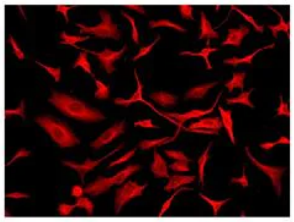
6 product images



Flow Cytometry (Intracellular) - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

Calcineurin A Flow Cytometry (Intracellular) staining using rabbit Anti-Calcineurin A antibody

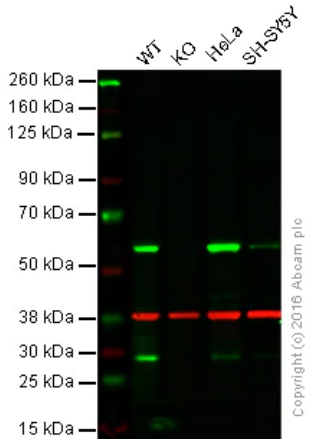
Overlay histogram showing HeLa cells stained with ab109412 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab109412, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H+L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunocytochemistry/ Immunofluorescence - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

Calcineurin A Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Calcineurin A antibody

Immunofluorescent staining of HeLa cells using 1/100 ab109412.



Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

Calcineurin A Western blot staining using rabbit Anti-Calcineurin A antibody

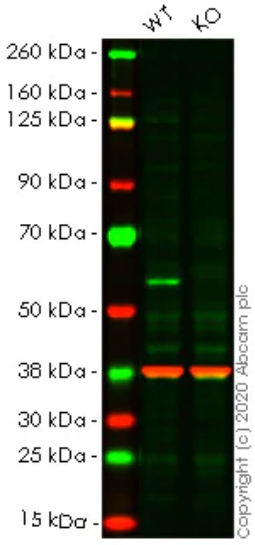
Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: Calcineurin A knockout HAP1 cell lysate (20 µg)
Lane 3: A431 cell lysate (20 µg)
Lane 4: HeLa cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab109412 observed at 60 kDa. Red - loading control, ab8245, observed at 37 kDa.

ab109412 was shown to specifically react with Calcineurin A when Calcineurin A knockout samples were used. Wild-type and Calcineurin A knockout samples were subjected to SDS-PAGE. ab109412 and ab8245 (loading control to GAPDH) were both diluted 1/10000 and incubated overnight at 4°C. 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 1/10000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

Predicted band size: 59 kDa

Observed band size: 60 kDa



Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

Calcineurin A Western blot staining using rabbit Anti-Calcineurin A antibody

Lanes 1- 2: Merged signal (red and green). Green - ab109412 observed at 59 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab109412 was shown to react with Calcineurin A in wild-type HeLa cells in western blot. Loss of signal was observed when knockout cell line ab265130 (knockout cell lysate ab257181) was used. Wild-type HeLa and PPP3CA knockout HeLa cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab109412 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 10000 dilution and a 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-Calcineurin A antibody [EPR1670(2)] (ab109412) at 1/10000 dilution

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

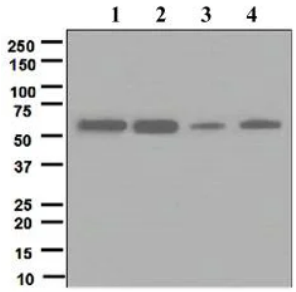
Lane 2:
PPP3CA knockout HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human PPP3CA (Calcineurin A) knockout HeLa cell line (ab265130)

Performed under reducing conditions.

Predicted band size: 59 kDa

Observed band size: 59 kDa



Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

All lanes:
Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412) at 1/10000 dilution

Lane 1:
fetal brain lysate at 10 µg

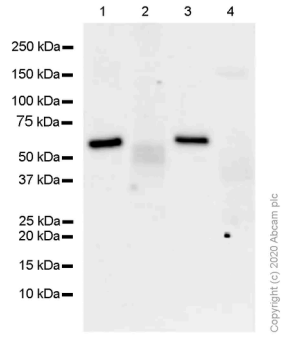
Lane 2:
SH-SY5Y lysate at 10 µg

Lane 3:
A431 lysate at 10 µg

Lane 4:
HeLa cells lysate at 10 µg

Predicted band size: 59 kDa

Observed band size: 58 kDa



Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412)

All lanes:
Western blot - Anti-Calcineurin A antibody [EPR1670(2)] (ab109412) at 1/3000 dilution

Lane 1:
Mouse brain cortex lysate at 10 µg

Lane 2:
Mouse lung lysate at 10 µg

Lane 3:
Rat brain cortex lysate at 10 µg

Lane 4:
Rat liver lysate at 10 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ab97051) at 1/20000 dilution

Predicted band size: 59 kDa

Observed band size: 58 kDa, 59 kDa

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