abcam

ab2783

Anti-Calcium Pump PMCA4 ATPase antibody [JA9]

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Native Full Length Protein corresponding to Human ATP2B4. Database link P23634
Clone number	JA9
Purification technique	Affinity purification
Specificity	This antibody is specific to the PMCA4 isoform.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/500
Notes	

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

Expected

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

ICC

Tested

Species	Human, Cow
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	2 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

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

WB

Tested

Species	Human
Dilution info	1/1000

Notes	By Western blot, this antibody detects an ~129 kDa and an ~133 kDa protein representing PMCA4b and PMCA4a ATPase, respectively.

Expected

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

Target data

See full target information ATP2B4

Function	Calcium/calmodulin-regulated and magnesium-dependent enzyme that catalyzes the hydrolysis of ATP coupled with the transport of calcium out of the cell (PubMed:8530416). By regulating sperm cell calcium homeostasis, may play a role in sperm motility (By similarity).

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	The Calcium Pump PMCA4 ATPase also known as ATP2B4 is a plasma membrane calcium ATPase responsible for the extrusion of Ca2+ ions from the cell. It plays an essential role in maintaining calcium homeostasis within eukaryotic cells. PMCA4 weighs approximately 134 kDa and is expressed in various tissues including the

	heart brain and kidney. The protein actively transports Ca2+ out of the cell using energy obtained from ATP hydrolysis.
Biological function summary	PMCA4 regulates intracellular calcium levels impacting processes such as muscle contraction neurotransmitter release and cell signaling. PMCA4 does not function as part of a larger protein complex but interacts with calmodulin which modulates its activity. Calmodulin binding activates PMCA4 increasing its capability to efflux Ca2+ and maintain cellular calcium balance.
Pathways	The calcium pump PMCA4 ATPase plays a critical role in the calcium signaling pathway and the regulation of cardiac rhythm. It helps control Ca2+ concentration within the cell affecting proteins like calcineurin that respond to calcium fluctuations. PMCA4 also interrelates with the sodium-calcium exchanger integrally involved in cardiac muscle contraction and relaxation.
Associated diseases and disorders	PMCA4 has been linked to conditions such as heart failure and certain neurological disorders. Abnormal expression or function of PMCA4 can dysregulate calcium levels contributing to cardiac arrhythmias. Additionally altered PMCA4 activity can affect synaptic function connecting it indirectly to conditions like schizophrenia. Its interaction with proteins like alpha-synuclein implicated in neurological disorders further highlights PMCA4's relevance in disease states.

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

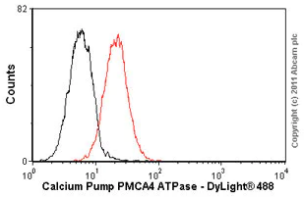
We do not recommend this combination. It is not covered by our product promise.

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.

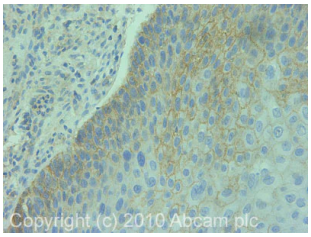
7 product images



Flow Cytometry - Anti-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783)

Calcium Pump PMCA4 ATPase Flow Cytometry staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

Overlay histogram showing HeLa cells stained with ab2783 (red line). The cells were fixed with 80% methanol (5 min) and incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab2783, 2µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.
Please note that Abcam do not have any data for use of this antibody on non-fixed cells. We welcome any customer feedback.

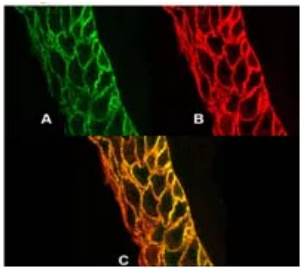


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783)

Calcium Pump PMCA4 ATPase Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

IHC image of ab2783 staining in human cervical carcinoma formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab2783, 1µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



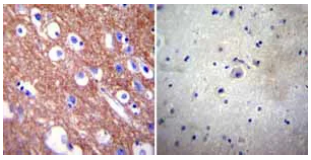
Immunocytochemistry - Anti-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783)

Calcium Pump PMCA4 ATPase Immunocytochemistry staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

Immunolocalization of Calcium Pump PMCA4 ATPase in human corneal epithelium.
(A) Immunolocalization of PMCA4 (green) using ab2783 on cell membranes of all cells in each layer of human corneal epithelium.

(B) Immunolocalization of Calcium Sensing Receptor (red) using ab19347 on cell membranes of human corneal epithelium.

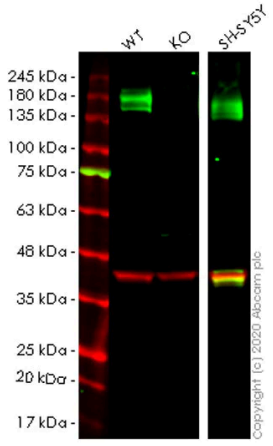
(C) Merged image.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783)

Calcium Pump PMCA4 ATPase Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

Immunohistochemistry was performed on normal biopsies of deparaffinized Human brain 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 1:100 with a mouse monoclonal antibody recognizing PMCA4 ATPase ab2783 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-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783)

Calcium Pump PMCA4 ATPase Western blot staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

Lanes 1-3: Merged signal (red and green). Green - ab2783 observed at 140 kDa. Red - loading control, ab181602 observed at 37 kDa.
ab2783 Anti-Calcium Pump PMCA4 ATPase antibody [JA9] was shown to specifically react with Calcium Pump PMCA4 ATPase in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab264720 (knockout cell lysate ab258321) was used. Wild-type and Calcium Pump PMCA4 ATPase knockout samples were subjected to SDS-PAGE. ab2783 and Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) were incubated overnight at 4°C at 1 in 500 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) secondary antibodies at 1 in 10000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Calcium Pump PMCA4 ATPase antibody [JA9] (ab2783) at 1/500 dilution

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

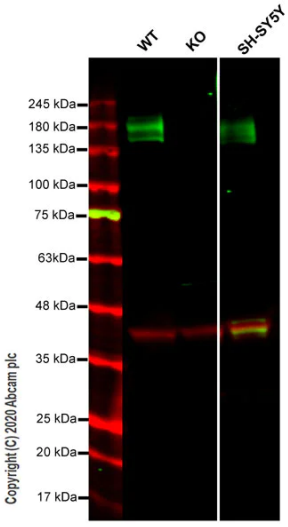
Lane 2:
ATP2B4 knockout HeLa cell lysate at 20 µg

Lane 3:
SH-SY5Y cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 138 kDa

Observed band size: 140 kDa



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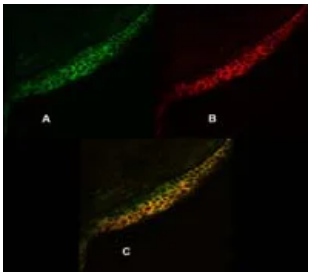
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Calcium Pump PMCA4 ATPase Immunocytochemistry staining using mouse Anti-Calcium Pump PMCA4 ATPase antibody

Immunolocalization of Calcium Pump PMCA4 and Calcium Sensing Receptor in bovine corneal epithelium (bCE).
(A) Immunolocalization of Calcium Pump PMCA4 (green) using ab2783 on cell membranes of all cells in each layer of bCE.

(B) Immunolocalization of Calcium Sensing Receptor (red) using ab19347 on cell membranes of bCE mostly in wing- and squamous cell layers.

(C) Merged image.

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