SANTA CRUZ BIOTECHNOLOGY, INC.

PMCA4b (JA3): sc-20027

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The plasma membrane Ca^{2+}-pumping ATPase (PMCA) mRNAs are encoded on four genes designated PMCA1-4. The PMCA genes undergo alternative splicing to yield "b" splice forms, which contain PDZ interaction domains and interact promiscuously but also specifically with different members of the PSD95 family. PMCA4b is the major PMCA expressed in developing mammary tissue. During lactation, PMCA1b expression increases while PMCA4b expression decreases, indicating that PMCAs play a critical role in maintaining cellular Ca^{2+} homeostasis. In addition, human PMCA4b may have an important role in regulating intracellular Ca^{2+} in the apoptotic cell. PMCA4b is cleaved at Asp 1080 by caspase-3 to produce a single fragment that is fully active, responding much faster to an increase in Ca^{2+} than the autoinhibited form. PMCA4b also plays an essential role in maintaining low cytosolic Ca^{2+} in resting platelets. Specifically, PMCA4b is phosphorylated on Tyr 1176 by $pp60^{src}$.

CHROMOSOMAL LOCATION

Genetic locus: ATP2B4 (human) mapping to 1q32.1; Atp2b4 (mouse) mapping to 1 E4.

SOURCE

PMCA4b (JA3) is a mouse monoclonal antibody raised against amino acids 1156-1180 of purified erythrocyte Ca^{2+} pump of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PMCA4b (JA3) is available conjugated to agarose (sc-20027 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-20027 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-20027 PE), fluorescein (sc-20027 FITC), Alexa Fluor® 488 (sc-20027 AF488), Alexa Fluor® 546 (sc-20027 AF546), Alexa Fluor® 594 (sc-20027 AF594) or Alexa Fluor® 647 (sc-20027 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-20027 AF680) or Alexa Fluor® 790 (sc-20027 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

PMCA4b (JA3) is recommended for detection of PMCA4b of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for PMCA4b siRNA (h): sc-36279, PMCA4b siRNA (m): sc-36280, PMCA4b shRNA Plasmid (h): sc-36279-SH, PMCA4b shRNA Plasmid (m): sc-36280-SH, PMCA4b shRNA (h) Lentiviral Particles: sc-36279-V and PMCA4b shRNA (m) Lentiviral Particles: sc-36280-V.

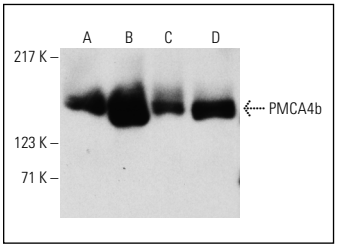
Molecular Weight of PMCA4b: 140 kDa.

Positive Controls: JAR cell lysate: sc-2276, Hep G2 cell lysate: sc-2227 or HeLa whole cell lysate: sc-2200.

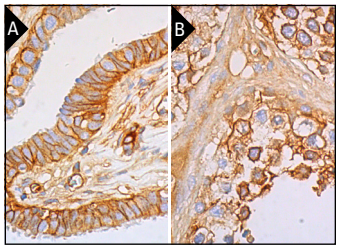
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



PMCA4b (JA3): sc-20027. Western blot analysis of PMCA4b expression in Caki-1 (**A**), JAR (**B**), Hep G2 (**C**) and HeLa (**D**) whole cell lysates.



PMCA4b (JA3): sc-20027. Immunoperoxidase staining of formalin fixed, paraffin-embedded human fallopian tube tissue showing membrane and cytoplasmic staining of glandular cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing membrane and cytoplasmic staining of cells in seminiferous ducts and cytoplasmic staining of Leydig cells (**B**).

SELECT PRODUCT CITATIONS

1. Huang, T.T., et al. 2006. Regulation of monoubiquitinated PCNA by DUB autocleavage. Nat. Cell Biol. 8: 339-347.
2. Kozieł, K., et al. 2009. Plasma membrane associated membranes (PAM) from Jurkat cells contain STIM1 protein is PAM involved in the capacitative calcium entry? Int. J. Biochem. Cell Biol. 41: 2440-2449.
3. Bonza, M.C. and Luoni, L. 2010. Plant and animal type 2B Ca^{2+}-ATPases: evidence for a common auto-inhibitory mechanism. FEBS Lett. 584: 4783-4788.
4. Chen, J., et al. 2016. Besides an ITIM/SHP-1-dependent pathway, CD22 collaborates with Grb2 and plasma membrane calcium-ATPase in an ITIM/ SHP-1-independent pathway of attenuation of $Ca^{2+}{}_i$ signal in B cells. Oncotarget 7: 56129-56146.
5. Wu, B., et al. 2021. NKD2 mediates stimulation-dependent ORAI1 trafficking to augment Ca^{2+} entry in T cells. Cell Rep. 36: 109603.
6. Wang, M., et al. 2022. Renalase and its receptor, PMCA4b, are expressed in the placenta throughout the human gestation. Sci. Rep. 12: 4953.
7. Jänsch, M., et al. 2023. Inducible over-expression of cardiac Nos1ap causes short QT syndrome in transgenic mice. FEBS Open Bio 13: 118-132.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.