

PMCA1/4 (5F10): sc-20028



The Power to Question

BACKGROUND

The plasma membrane Ca²⁺-pumping ATPase (PMCA) mRNAs are encoded on four genes designated PMCA1-4. PMCA4b is the major PMCA expressed in developing mammary tissue. During lactation, PMCA1b expression increases while PMCA4b expression decreases, indicating that PMCA1b plays a critical role in maintaining cellular Ca²⁺ homeostasis. In addition, human PMCA4b may have an important role in regulating intracellular Ca²⁺ 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 Ca²⁺ than the autoinhibited form. Both PMCA1 and PMCA4 are expressed at similar levels in astrocytes and in neurons.

CHROMOSOMAL LOCATION

Genetic locus: ATP2B1 (human) mapping to 12q21.33, ATP2B4 (human) mapping to 1q32.1; Atp2b1 (mouse) mapping to 10 C3, Atp2b4 (mouse) mapping to 1 E4.

SOURCE

PMCA1/4 (5F10) is a mouse monoclonal antibody epitope mapping to amino acids 719-738 of PMCA4b of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PMCA1/4 (5F10) is available conjugated to agarose (sc-20028 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-20028 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-20028 PE), fluorescein (sc-20028 FITC), Alexa Fluor® 488 (sc-20028 AF488), Alexa Fluor® 546 (sc-20028 AF546), Alexa Fluor® 594 (sc-20028 AF594) or Alexa Fluor® 647 (sc-20028 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-20028 AF680) or Alexa Fluor® 790 (sc-20028 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

PMCA1/4 (5F10) is recommended for detection of PMCA1b, PMCA4a and PMCA4b of mouse, rat, human and *Arabidopsis thaliana* 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

PMCA1/4 (5F10) is also recommended for detection of PMCA1b, PMCA4a and PMCA4b in additional species, including bovine, feline and canine.

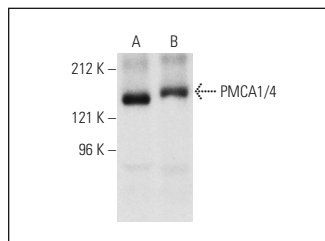
Molecular Weight of PMCA1/4: 129-140 kDa.

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

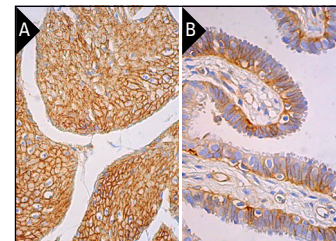
STORAGE

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

DATA



PMCA1/4 (5F10): sc-20028. Western blot analysis of PMCA1/4 expression in JAR (A) and Hep G2 (B) whole cell lysates.



PMCA1/4 (5F10): sc-20028. Immunoperoxidase staining of formalin fixed, paraffin-embedded human smooth muscle tissue showing membrane and cytoplasmic staining of smooth muscle cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human fallopian tube tissue showing membrane and cytoplasmic staining of glandular cells (B).

SELECT PRODUCT CITATIONS

- Yang, Y.M., et al. 2009. Alteration of RANKL-induced osteoclastogenesis in primary cultured osteoclasts from SERCA2^{-/-} mice. *J. Bone Miner. Res.* 24: 1763-1769.
- Wilkins, M.R., et al. 2012. In contrast to sheep, goats adapt to dietary calcium restriction by increasing intestinal absorption of calcium. *Comp. Biochem. Physiol. A Mol. Integr. Physiol.* 163: 396-406.
- Marques-da-Silva, D. and Gutierrez-Merino, C. 2014. Caveolin-rich lipid rafts of the plasma membrane of mature cerebellar granule neurons are microcompartments for calcium/reactive oxygen and nitrogen species cross-talk signaling. *Cell Calcium* 56: 108-123.
- Tran, Q.K., et al. 2015. Hetero-oligomeric complex between the G protein-coupled estrogen receptor 1 and the plasma membrane Ca²⁺-ATPase 4b. *J. Biol. Chem.* 290: 13293-13307.
- Olli, K.E., et al. 2018. Plasma membrane calcium ATPase 4 (PMCA4) coordinates calcium and nitric oxide signaling in regulating murine sperm functional activity. *J. Cell. Physiol.* 233: 11-22.
- Fereshteh, Z., et al. 2019. Detection of extracellular vesicles in the mouse vaginal fluid: their delivery of sperm proteins that stimulate capacitation and modulate fertility. *J. Cell. Physiol.* 234: 12745-12756.
- Briones-Orta, M.A., et al. 2021. Quantitative expression of key cancer markers in the AS-30D hepatocarcinoma model. *Front. Oncol.* 11: 670292.
- Corraliza-Gomez, M., et al. 2022. The neuroprotective lipocalin apolipoprotein D stably interacts with specific subtypes of detergent-resistant membrane domains in a Basigin-independent manner. *Mol. Neurobiol.* 59: 4015-4029.

RESEARCH USE

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