

# PMCA1/4 (6D131): sc-71907

## BACKGROUND

The plasma membrane  $\text{Ca}^{2+}$ -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  $\text{Ca}^{2+}$  homeostasis. In addition, human PMCA4b may have an important role in regulating intracellular  $\text{Ca}^{2+}$  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  $\text{Ca}^{2+}$  than the autoinhibited form. Both PMCA1 and PMCA4 are expressed at similar levels in astrocytes and in neurons.

## REFERENCES

1. Borke, J.L., et al. 1989. Plasma membrane calcium pump and 28 kDa calcium binding protein in cells of rat kidney distal tubules. *Am. J. Physiol.* 257: 842-849.
2. Brandt, P., et al. 1992. Analysis of the tissue-specific distribution of mRNAs encoding the plasma membrane calcium pumping ATPases and characterization of an alternately spliced form of PMCA4 at the cDNA and genomic levels. *J. Biol. Chem.* 267: 4376-4385.
3. Reinhardt, T.A., et al. 1999.  $\text{Ca}^{2+}$ -ATPases and their expression in the mammary gland of pregnant and lactating rats. *Am. J. Physiol.* 276: 796-802.
4. Fresu, L., et al. 1999. Plasma membrane calcium ATPase isoforms in astrocytes. *Glia* 28: 150-155.
5. Reinhardt, T.A., et al. 2000.  $\text{Ca}^{2+}$ -ATPase protein expression in mammary tissue. *Am. J. Physiol., Cell Physiol.* 279: 1595-1602.
6. Paszty, K., et al. 2002. Plasma membrane  $\text{Ca}^{2+}$ -ATPase isoform 4b is cleaved and activated by caspase-3 during the early phase of apoptosis. *J. Biol. Chem.* 277: 6822-6829.

## 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 (6D131) is a mouse monoclonal antibody epitope mapping to amino acids 719-738 of PMCA4b of human origin.

## PRODUCT

Each vial contains 200  $\mu\text{g}$  IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## STORAGE

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

## APPLICATIONS

PMCA1/4 (6D131) 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  $\mu\text{g}$  per 100-500  $\mu\text{g}$  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).

PMCA1/4 (6D131) is also recommended for detection of PMCA1b, PMCA4a and PMCA4b in additional species, including bovine, feline and canine.

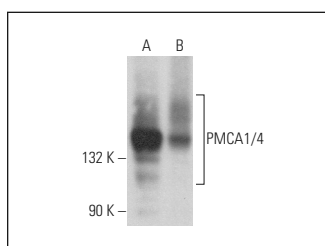
Molecular Weight of PMCA1/4: 129-140 kDa.

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

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgG $\kappa$  BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



PMCA1/4 (6D131): sc-71907. Western blot analysis of PMCA1/4 expression in HeLa (A) and Hep G2 (B) whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Schmidt, N., et al. 2017. Neuroplastin and basigin are essential auxiliary subunits of plasma membrane  $\text{Ca}^{2+}$ -ATPases and key regulators of  $\text{Ca}^{2+}$ -clearance. *Neuron* 96: 827-838.

## RESEARCH USE

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