# SANTA CRUZ BIOTECHNOLOGY, INC.

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



BACKGROUND

The plasma membrane Ca<sup>2+</sup>-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 PMCAs play a critical role in maintaining cellular Ca<sup>2+</sup> homeostasis. In addition, human PMCA4b may have an important role in regulating intracellular Ca<sup>2+</sup> 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<sup>2+</sup> 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.
- 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.
- Reinhardt, T.A., et al. 1999. Ca<sup>2+</sup>-ATPases and their expression in the mammary gland of pregnant and lactating rats. Am. J. Physiol. 276: 796-802.
- Fresu, L., et al. 1999. Plasma membrane calcium ATPase isoforms in astrocytes. Glia 28: 150-155.
- Reinhardt, T.A., et al. 2000. Ca<sup>2+</sup>-ATPase protein expression in mammary tissue. Am. J. Physiol., Cell Physiol. 279: 1595-1602.
- Paszty, K., et al. 2002. Plasma membrane Ca<sup>2+</sup>-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  $\mu g$  lgG\_{2a} 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), immuno-precipitation [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).

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-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> 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-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ 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. PMCA1/4 (6D131): sc-71907. Western blot analysis of PMCA1/4 expression in JAR (A) and M1 (B) whole cell lysates.

## **SELECT PRODUCT CITATIONS**

 Schmidt, N., et al. 2017. Neuroplastin and basigin are essential auxiliary subunits of plasma membrane Ca<sup>2+</sup>-ATPases and key regulators of Ca<sup>2+</sup>clearance. Neuron 96: 827-838.

### **RESEARCH USE**

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