SANTA CRUZ BIOTECHNOLOGY, INC.

SERCA1/2/3 (B-7): sc-271669

BACKGROUND

ATP dependent calcium pumps are responsible, in part, for the maintenance of low cytoplasmic free calcium concentrations. The ATP pumps that reside in intracellular organelles are encoded by a family of structurally related enzymes, termed the sarcoplasmic or endoplasmic reticulum calcium (SERCA) ATPases. The sarcoplasmic reticulum of striated muscle is a specialized intracellular membrane system that plays a critical role in the contraction and relaxation of muscle. The SERCAs mediate Ca^{2+} uptake into intracellular stores. SERCA-mediated Ca^{2+} uptake induces and maintains muscular relaxation. The SERCA1 gene is exclusively expressed in type II (fast) skeletal muscle. The SERCA2 gene is subject to tissue-dependent processing which is responsible for the generation of the SERCA2a muscle-specific form expressed in type I (slow) skeletal, cardiac and smooth muscle, and the SERCA2b isoform expressed in all cell types. The SERCA3 gene is not as well characterized and is found in non-muscle cells. SERCA2 plays an important part in regulating cardiac contractile function. SERCA3 is an isoform expressed in several cell types including platelets, lymphoid cells and mast cells. SERCA1, SERCA2 and SERCA3 all undergo alternative splicing.

SOURCE

SERCA1/2/3 (B-7) is a mouse monoclonal antibody raised against amino acids 1-300 mapping at the N-terminus of SERCA1 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.

SERCA1/2/3 (B-7) is available conjugated to agarose (sc-271669 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271669 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271669 PE), fluorescein (sc-271669 FITC), Alexa Fluor® 488 (sc-271669 AF488), Alexa Fluor® 546 (sc-271669 AF546), Alexa Fluor® 594 (sc-271669 AF594) or Alexa Fluor® 647 (sc-271669 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271669 AF680) or Alexa Fluor® 790 (sc-271669 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

SERCA1/2/3 (B-7) is recommended for detection of SERCA1, SERCA2 and SERCA3 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of SERCA1/2/3: 110/100/97 kDa.

Positive Controls: SERCA3 (m2): 293T Lysate: sc-125983, MCF7 whole cell lysate: sc-2206 or A549 cell lysate: sc-2413.

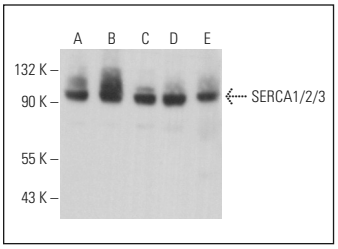
STORAGE

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

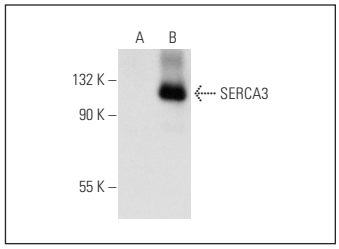
RESEARCH USE

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

DATA



SERCA1/2/3 (B-7): sc-271669. Western blot analysis of SERCA1/2/3 expression in A549 (**A**), MCF7 (**B**), A-673 (**C**), A-10 (**D**) and L6 (**E**) whole cell lysates.



SERCA1/2/3 (B-7): sc-271669. Western blot analysis of SERCA3 expression in non-transfected: sc-117752 (**A**) and mouse SERCA3 transfected: sc-125983 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Kao, E., et al. 2012. Human immunodeficiency virus protease inhibitors modulate Ca^{2+} homeostasis and potentiate alcoholic stress and injury in mice and primary mouse and human hepatocytes. Hepatology 56: 594-604.
2. Arai, S., et al. 2017. Functional loss of DHRS7C induces intracellular Ca^{2+} overload and myotube enlargement in C2C12 cells via calpain activation. Am. J. Physiol., Cell Physiol. 312: C29-C39.
3. Allawzi, A.M., et al. 2018. Activation of anoctamin-1 limits pulmonary endothelial cell proliferation via p38-MAPK-dependent apoptosis. Am. J. Respir. Cell Mol. Biol. 58: 658-667.
4. Tavera-Montañez, C., et al. 2019. The classic metal-sensing transcription factor MTF1 promotes myogenesis in response to copper. FASEB J. 33: 14556-14574.
5. Nagasaka, T., et al. 2020. Morphological alterations of the sarcotubular system in permanent myopathy of hereditary hypokalemic periodic paralysis with a mutation in the CACNA1S gene. J. Neuropathol. Exp. Neurol. 79: 1276-1292.
6. Pang, Y. and Thomas, P. 2021. Involvement of sarco/endoplasmic reticulum Ca^{2+}-ATPase (SERCA) in mPRα (PAQR7)- mediated progesterone induction of vascular smooth muscle relaxation. Am. J. Physiol. Endocrinol. Metab. 320: E453-E466.
7. Duritahala., et al. 2022. Involvement of Ca^{2+}-ATPase in suppressing the appearance of bovine helically motile spermatozoa with intense force prior to cryopreservation. J. Reprod. Dev. 68: 181-189.
8. McCann, C., et al. 2022. The mitochondrial Cu^{+} transporter PiC2 (SLC25A3) is a target of MTF1 and contributes to the development of skeletal muscle *in vitro*. Front. Mol. Biosci. 9: 1037941.

PROTOCOLS

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