

SERCA2 (IID8): sc-53010



The Power to Question

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.

REFERENCES

1. Aubier, M. and Viïres, N. 1998. Calcium ATPase and respiratory muscle function. *Eur. Respir. J.* 11: 758-766.
2. Anger, M., et al. 1998. Cellular distribution of Ca^{2+} pumps and Ca^{2+} release channels in rat cardiac hypertrophy induced by aortic stenosis. *Circulation* 98: 2477-2486.

CHROMOSOMAL LOCATION

Genetic locus: ATP2A2 (human) mapping to 12q24.11; Atp2a2 (mouse) mapping to 5 F.

SOURCE

SERCA2 (IID8) is a mouse monoclonal antibody raised against purified cardiac sarcoplasmic reticulum of canine origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

SERCA2 (IID8) is available conjugated to agarose (sc-53010 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-53010 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-53010 PE), fluorescein (sc-53010 FITC), Alexa Fluor® 488 (sc-53010 AF488), Alexa Fluor® 546 (sc-53010 AF546), Alexa Fluor® 594 (sc-53010 AF594) or Alexa Fluor® 647 (sc-53010 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-53010 AF680) or Alexa Fluor® 790 (sc-53010 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

APPLICATIONS

SERCA2 (IID8) is recommended for detection of SERCA2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ 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).

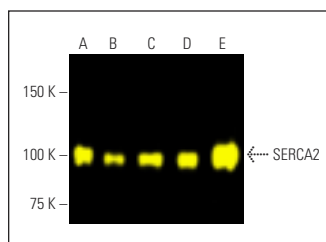
SERCA2 (IID8) is also recommended for detection of SERCA2 in additional species, including rabbit, bovine, canine and porcine.

Suitable for use as control antibody for SERCA2 siRNA (h): sc-36484, SERCA2 siRNA (m): sc-36485, SERCA2 shRNA Plasmid (h): sc-36484-SH, SERCA2 shRNA Plasmid (m): sc-36485-SH, SERCA2 shRNA (h) Lentiviral Particles: sc-36484-V and SERCA2 shRNA (m) Lentiviral Particles: sc-36485-V.

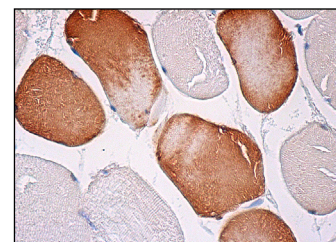
Molecular Weight of SERCA2: 100 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, HT-1080 whole cell lysate: sc-364183 or CCRF-CEM cell lysate: sc-2225.

DATA



SERCA2 (IID8) Alexa Fluor® 488: sc-53010 AF488. Direct fluorescent western blot analysis of SERCA2 expression in A-431 (A), CCRF-CEM (B), HT-1080 (C), K-562 (D) and A549 (E) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



SERCA2 (IID8): sc-53010. Immunoperoxidase staining of formalin fixed, paraffin-embedded human skeletal muscle tissue showing cytoplasmic staining of subset of myocytes.

SELECT PRODUCT CITATIONS

1. 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.
2. Bovo, E., et al. 2019. Novel approach for quantification of endoplasmic reticulum Ca^{2+} transport. *Am. J. Physiol. Heart Circ. Physiol.* 316: H1323-H1331.
3. Byun, J.K., et al. 2020. Inhibition of glutamine utilization synergizes with immune checkpoint inhibitor to promote antitumor immunity. *Mol. Cell* 80: 592-606.e8.
4. Uchida, Y., et al. 2021. *Trans*-2-enoyl-CoA reductase limits Ca^{2+} accumulation in the endoplasmic reticulum by inhibiting the Ca^{2+} pump SERCA2b. *J. Biol. Chem.* 296: 100310.

RESEARCH USE

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