

SERCA1 (VE121G9): sc-58287

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 Ca²⁺ uptake into intracellular stores. SERCA-mediated Ca²⁺ 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 Viires, N. 1998. Calcium ATPase and respiratory muscle function. *Eur. Respir. J.* 11: 758-766.
2. Anger, M., et al. 1998. Cellular distribution of Ca²⁺ pumps and Ca²⁺ release channels in rat cardiac hypertrophy induced by aortic stenosis. *Circulation* 98: 2477-2486.
3. Loukianov, E., et al. 1998. Enhanced myocardial contractility and increased Ca²⁺ transport function in transgenic hearts expressing the fast-twitch skeletal muscle sarcoplasmic reticulum Ca²⁺-ATPase. *Circ. Res.* 83: 889-897.
4. Bobe, R., et al. 1998. Expression of two isoforms of the third sarco/endoplasmic reticulum Ca²⁺ ATPase (SERCA3) in platelets. Possible recognition of the SERCA3b isoform by the PL/IM430 monoclonal antibody. *FEBS Lett.* 423: 259-264.
5. Poch, E., et al. 1998. Functional characterization of alternatively spliced human SERCA3 transcripts. *Am. J. Physiol.* 275: C1449-C1458.

CHROMOSOMAL LOCATION

Genetic locus: ATP2A1 (human) mapping to 16p11.2; Atp2a1 (mouse) mapping to 7 F3.

SOURCE

SERCA1 (VE121G9) is a mouse monoclonal antibody raised against purified skeletal muscle sarcoplasmic reticulum of rabbit origin.

PRODUCT

Each vial contains 200 µg IgG₁ 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

SERCA1 (VE121G9) is recommended for detection of SERCA1 of mouse, rat, human, rabbit and canine 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)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for SERCA1 siRNA (h): sc-36482, SERCA1 siRNA (m): sc-36483, SERCA1 shRNA Plasmid (h): sc-36482-SH, SERCA1 shRNA Plasmid (m): sc-36483-SH, SERCA1 shRNA (h) Lentiviral Particles: sc-36482-V and SERCA1 shRNA (m) Lentiviral Particles: sc-36483-V.

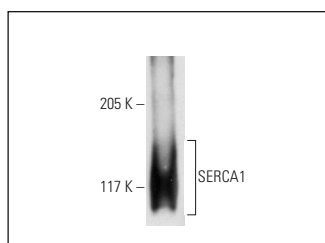
Molecular Weight of SERCA1: 110 kDa.

Positive Controls: rabbit muscle tissue extract or human fetal muscle tissue extract.

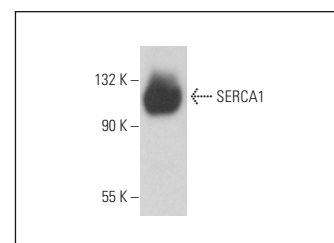
RECOMMENDED SUPPORT REAGENTS

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™ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



SERCA1 (VE121G9): sc-58287. Western blot analysis of SERCA1 expression in rabbit muscle tissue extract.



SERCA1 (VE121G9): sc-58287. Western blot analysis of SERCA1 expression in human fetal muscle tissue extract.

SELECT PRODUCT CITATIONS

1. Gokhin, D.S. and Fowler, V.M. 2011. Cytoplasmic γ-Actin and tropomodulin isoforms link to the sarcoplasmic reticulum in skeletal muscle fibers. *J. Cell Biol.* 194: 105-120.
2. Guglielmi, V., et al. 2016. Characterization of sarcoplasmic reticulum Ca²⁺ ATPase pumps in muscle of patients with myotonic dystrophy and with hypothyroid myopathy. *Neuromuscul. Disord.* 26: 378-385.
3. Kelly, N.A., et al. 2018. Quantification and characterization of grouped type I myofibers in human aging. *Muscle Nerve* 57: E52-E59.

RESEARCH USE

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