

# SERCA1 (F-18): sc-12493

## 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 Viires, 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.
3. Loukianov, E., et al. 1998. Enhanced myocardial contractility and increased  $Ca^{2+}$  transport function in transgenic hearts expressing the fast-twitch skeletal muscle sarcoplasmic reticulum  $Ca^{2+}$ -ATPase. *Circ. Res.* 83: 889-897.
4. Bobe, R., et al. 1998. Expression of two isoforms of the third sarco/endoplasmic reticulum  $Ca^{2+}$  ATPase (SERCA3) in platelets. Possible recognition of the SERCA3b isoform by the PL/IM430 monoclonal antibody. *FEBS Lett.* 423: 259-264.

## CHROMOSOMAL LOCATION

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

## SOURCE

SERCA1 (F-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of SERCA1 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12493 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## STORAGE

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

## APPLICATIONS

SERCA1 (F-18) is recommended for detection of SERCA1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1–2  $\mu$ g per 100–500  $\mu$ g 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).

SERCA1 (F-18) is also recommended for detection of SERCA1 in additional species, including equine, bovine and porcine.

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.

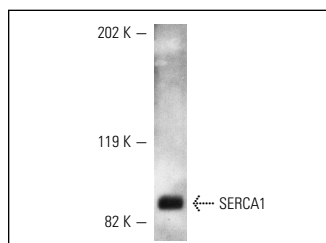
Molecular Weight of SERCA1: 110 kDa.

Positive Controls: A-10 cell lysate: sc-3806 or rat skeletal muscle tissue extract.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## DATA



SERCA1 (F-18): sc-12493. Western blot analysis of SERCA1 expression in A-10 whole cell lysate.

## RESEARCH USE

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

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Try **SERCA1 (A-6): sc-515162** or **SERCA1 (G-8): sc-365098**, our highly recommended monoclonal alternatives to SERCA1 (F-18).