SANTA CRUZ BIOTECHNOLOGY, INC.

phospholamban (FL-52): sc-30142

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The sarco(endo)plasmic-reticulum (SER) regulatory protein, phospholamban (PLB), is a small, plasma membrane-associated phospho-protein found in the SER of cardiac, smooth and slow-twitch muscle. Believed to assemble into a pentamer, PLB regulates cardiac contractility and Ca^{2+} affinity for cardiac SER Ca^{2+} ATPase (SERCA2a). Non-phosphorylated PLB associates with SERCA2a and inhibits Ca^{2+} reuptake into the SER. PLB activation occurs when key serine/threonine residues in PLB (Ser 10, Ser 16, Thr 17) are phosphorylated by numerous effectors, which include PKC, PKA, PKG and CaM kinase. Phosphorylation of PLB causes dissociation from SERCA2a and a subsequent increase in the rate of Ca^{2+} reuptake into the SER, which accelerates ventricular relaxation.

REFERENCES

1. Koss, K.L. and Kranias, E.G. 1996. Phospholamban: a prominent regulator of myocardial contractility. Circ. Res. 79: 1059-1063.
2. Arkin, I.T., et al. 1997. Structural perspectives of phospholamban, a helical transmembrane pentamer. Annu. Rev. Biophys. Biomol. Struct. 26: 157-179.
3. Coyler, J. 1998. Phosphorylation states of phospholamban. Ann. N.Y. Acad. Sci. 853: 79-91.
4. Adams, P.D., et al. 1998. Models for the transmembrane region of the phospholamban pentamer: which is correct? Ann. N.Y. Acad. Sci. 853: 178-185.
5. Minamisawa, S., et al. 1999. Chronic phospholamban-sarcoplasmic reticulum calcium ATPase interaction is the critical calcium cycling defect in dilated cardiomyopathy. Cell 99: 313-322.
6. Zhai, J., et al. 2000. Cardiac-specific overexpression of a superinhibitory pentameric phospholamban mutant enhances inhibition of cardiac function *in vivo*. J. Biol.Chem. 275: 10538-10544.

CHROMOSOMAL LOCATION

Genetic locus: PLN (human) mapping to 6q22.31; Pln (mouse) mapping to 10 B3.

SOURCE

phospholamban (FL-52) is a rabbit polyclonal antibody raised against amino acids 1-52 representing full length phospholamban of human origin.

PRODUCT

Each vial contains 200 µg IgG 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.

PROTOCOLS

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

APPLICATIONS

phospholamban (FL-52) is recommended for detection of phospholamban of mouse, rat and human 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)], 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).

phospholamban (FL-52) is also recommended for detection of phospholamban in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for phospholamban siRNA (h): sc-39143, phospholamban siRNA (m): sc-39144, phospholamban shRNA Plasmid (h): sc-39143-SH, phospholamban shRNA Plasmid (m): sc-39144-SH, phospholamban shRNA (h) Lentiviral Particles: sc-39143-V and phospholamban shRNA (m) Lentiviral Particles: sc-39144-V.

Molecular Weight of phospholamban monomer: 6 kDa.

Molecular Weight of phospholamban oligomer: 25 kDa.

Positive Controls: rat heart extract: sc-2393 or mouse heart extract: sc-2254.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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 goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Kemecsei, P., et al. 2010. Hearts of surviving MLP-KO mice show transient changes of intracellular calcium handling. Mol. Cell. Biochem. 342: 251-260.
2. Beeri, R., et al. 2010. Gene delivery of sarcoplasmic reticulum calcium ATPase inhibits ventricular remodeling in ischemic mitral regurgitation. Circ. Heart Fail. 3: 627-634.

RESEARCH USE

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