SANTA CRUZ BIOTECHNOLOGY, INC.

phospholamban (F-7): sc-393990

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The sarco(endo)plasmic-reticulum (SER) regulatory protein, phospholamban (PLB), is a small, plasma membrane-associated phosphoprotein 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., et al. 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.

CHROMOSOMAL LOCATION

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

SOURCE

phospholamban (F-7) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 7-32 at the N-terminus of phospholamban 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.

phospholamban (F-7) is available conjugated to agarose (sc-393990 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-393990 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-393990 PE), fluorescein (sc-393990 FITC), Alexa Fluor® 488 (sc-393990 AF488), Alexa Fluor® 546 (sc-393990 AF546), Alexa Fluor® 594 (sc-393990 AF594) or Alexa Fluor® 647 (sc-393990 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-393990 AF680) or Alexa Fluor® 790 (sc-393990 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-393990 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

phospholamban (F-7) is recommended for detection of phospholamban 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

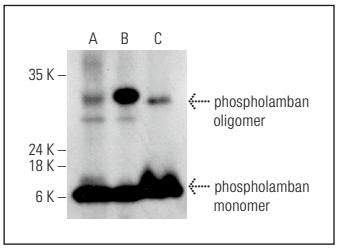
Suitable for use as control antibody for phospholamban siRNA (h): sc-39143, phospholamban siRNA (m): sc-39144, phospholamban shRNA Plasmid (h): sc-39143-SH, phospholamban shRNA Plasmid (m): sc-39144-SH, phospholamban shRNA (h) Lentiviral Particles: sc-39143-V and phospholamban shRNA (m) Lentiviral Particles: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

Molecular Weight of phospholamban oligomer: 25 kDa.

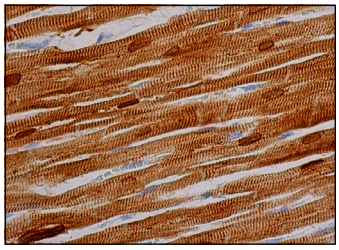
Molecular Weight of phospholamban monomer: 6 kDa.

Positive Controls: human heart extract: sc-363763, mouse heart extract: sc-2254 or rat heart extract: sc-2393.

DATA



phospholamban (F-7) HRP: sc-393990 HRP. Direct western blot analysis of phospholamban expression in rat heart (**A**), mouse heart (**B**) and human heart (**C**) tissue extracts.



phospholamban (F-7): sc-393990. Immunoperoxidase staining of formalin fixed, paraffin-embedded human heart muscle tissue showing cytoplasmic and nuclear staining of myocytes.

SELECT PRODUCT CITATIONS

1. Bai, T., et al. 2016. Resveratrol protects against lipopolysaccharide-induced cardiac dysfunction by enhancing SERCA2a activity through promoting the phospholamban oligomerization. Am. J. Physiol. Heart Circ. Physiol. 311: H1051-H1062.
2. Jesus, I.C.G., et al. 2020. Alamandine enhances cardiomyocyte contractility in hypertensive rats through a NO-dependent activation of CaMKII. Am. J. Physiol., Cell Physiol. 318: C740-C750.
3. Yamasan, B.E., et al. 2021. Ellagic acid prevents Ca^{2+} dysregulation and improves functional abnormalities of ventricular myocytes via attenuation of oxidative stress in pathological cardiac hypertrophy. Cardiovasc. Toxicol. 21: 630-641.
4. Bencurova, M., et al. 2023. Age-dependent changes in calcium regulation after myocardial ischemia-reperfusion injury. Biomedicines 11: 1193.

RESEARCH USE

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