Phospho-Phospholamban (Ser16/Thr17) Antibody

**Applications**

- Western
- Endogenous

**Species Cross-Reactivity**

- R, (H, M, B, Dg, Pg, Rabbit)

**Molecular Wt.**

- 6 kDa (monomer), 12 kDa, 24 kDa (oligomers)

**Source**

- Rabbit

**Specificity/Sensitivity**

Phospho-Phospholamban (Ser16/Thr17) Antibody recognizes endogenous levels of phospholamban protein only when phosphorylated at Ser16 and Thr17. This antibody does not detect mono- or non-phosphorylated phospholamban.

**Recommended Antibody Dilutions**

Western blotting 1:1000

For application specific protocols please see the web page for this product at www.cellsign.com.

For Research Use Only. Not For Use In Diagnostic Procedures.

**Storage**

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C.

Do not aliquot the antibody.

*Species cross-reactivity is determined by western blot.

**Anti-rabbit secondary antibodies must be used to detect this antibody.

** Imports/Exports**

- All species expected

**Entrez-Gene ID**

- #5350

**Swiss-Prot Acc.**

- P26678

**Background**

Phospholamban (PLN) was identified as a major phosphoprotein component of the sarcoplasmic reticulum (SR) (1). Its name, “lamban”, is derived from the greek word “lambano” meaning “to receive”, so named due to the fact that phospholamban is heavily phosphorylated on serine and threonine residues in response to cardiac stimulation (1). Although originally thought to be a single 20-25 kDa protein due to its electrophoretic mobility on SDS-PAGE, PLN is actually a 52 amino acid, 6 kDa, membrane-spanning protein capable of forming stable homo-oligomers, even in the presence of SDS (2). Despite very high expression in cardiac tissue, phospholamban is also expressed in skeletal and smooth muscle (3). Localization of PLN is limited to the SR, where it serves as a regulator of the sarco-endoplasmic reticulum calcium ATPase, SERCA (4). PLN binds directly to SERCA and effectively lowers its affinity for calcium, thus reducing calcium transport into the SR. Phosphorylation of PLN at Ser16 by Protein Kinase A or myotonic dystrophy protein kinase and/or phosphorylation at Thr17 by Ca2+/calmodulin-dependent protein kinase results in release of PLN from SERCA, relief of this inhibition, and increased calcium uptake by the SR (reviewed in 5.6). It has long been held that phosphorylation at Ser16 and Thr17 occurs sequentially, but increasing evidence suggests that phosphorylation, especially at Thr17, may be differentially regulated (reviewed in 7.8).

Rodent models of heart failure have shown that the expression level and degree of phosphorylation of PLN are critical in modulating calcium flux and contractility (reviewed in 9-11). Depletion or decreased expression of PLN promotes increased calcium flux and increased cardiac contractility, whereas overexpression of PLN results in sequestration of SERCA, decreased calcium flux, reduced contractility, and rescue of cardiac dysfunction and failure in mouse models of hypertension and cardiomyopathy (reviewed in 10). Distinct mutations in PLN have been detected in humans, resulting either in decreased or no expression of PLN protein (12,13) or binding defects between PLN, SERCA and/or regulatory proteins (14,15), both of which result in cardiac myopathy and heart failure. Interestingly, while the human phenotype of most PLN defects mimic those seen in rodent and vice versa, there are some instances where the type and severity of cardiac disease resulting from PLN mutations in rodent and human differ, making a consensus mechanism elusive.

**Recommended Companion Products**

- Phosphorylated Phospholamban (Ser16/Thr17) Antibody

**Western blot analysis of extracts from 16-month old control (WKY) and spontaneous hypertensive (SHR) rat hearts using Phospho-Phospholamban (Ser16/Thr17) Antibody (left), Phospholamban Antibody #8495 (middle), or GAPDH (14C10) Rabbit mAb #2118 (right).**

**IMPORTANT:** For western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

**Applications Key**

- W—Western
- IP—Immunoprecipitation
- IHC—Immunohistochemistry
- ChIP—Chromatin Immunoprecipitation
- IF—Immunofluorescence
- F—Flow cytometry
- E—ELISA-Peptide

**Species Cross-Reactivity Key**

- H—human
- M—mouse
- R—rat
- Hm—hamster
- Mm—mouse
- M—mink
- C—chicken
- Dm—D. melanogaster
- X—Xenopus
- Z—zebrafish
- B—bovine
- Dg—dog
- Pg—pig
- Sc—S. cerevisiae
- Ce—C. elegans
- Hr—horse
- All—all species expected

**Swiss-Prot Acc.**

- #5350

**Entrez-Gene ID**

- #5350

**Suppliers**

- Orders
  877-616-CELL (2355)
  orders@cellsign.com

- Support
  877-678-TECH (8324)
  info@cellsign.com

- Web
  www.cellsignal.com

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Please visit www.cellsignal.com for a complete listing of recommended companion products.

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Background References: