SANTA CRUZ BIOTECHNOLOGY, INC.

p-MYPT1 (Thr 696): sc-17556

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Myosin phosphatase target subunit 1 (MYPT1), also called myosin-binding subunit of myosin phosphatase, is one of the subunits and an integral component of the myosin phosphatase. Myosin phosphatase regulates the interaction of Actin and myosin downstream of the guanosine triphosphatase Rho, which inhibits myosin phosphatase through the action of Rho-kinase. MYPT1 promotor contains one Sp1 transcription factor binding site, suggesting that MYPT1 is a housekeeping gene. Myotonic dystrophy protein kinase phosphorylates MYPT1 at tyrosine 654 to regulate myosin II phosphorylation. Inhibition of myosin light chain phosphatase results in Ca^{2+} sensitization of smooth muscle contraction. This inhibition is modulated through phosphorylation of MYPT1 by a ZIP-like kinase, which associates with MYPTI and phosphorylates the inhibitory site in smooth muscle. The phosphorylation of MYPT1 by protein kinase C results in altered dephosphoryation of myosin by attenuating the binding of protein phosphatase 1 catalytic subunit (PP1c) and the phosphorylated myosin light chain to MYPT1. PP1c interacts at least four binding sties on the amino-terminus of MYPT1. A novel isoform of MYPT1, MYPT2, also interacts with PPIc. MYPT1 is localized on stress fibers, and it is distributed close to the cell membrane and at cell-cell contacts to regulate myosin phosphatase activity.

CHROMOSOMAL LOCATION

Genetic locus: PPP1R12A (human) mapping to 12q21.2; Ppp1r12a (mouse) mapping to 10 D1.

SOURCE

p-MYPT1 (Thr 696) is available as either goat (sc-17556) or rabbit (sc-17556-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing Thr 696 phosphorylated MYPT1 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.

Blocking peptide available for competition studies, sc-17556 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-MYPT1 (Thr 696) is recommended for detection of Thr 696 phosphorylated MYPT1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

p-MYPT1 (Thr 696) is also recommended for detection of correspondingly phosphorylated MYPT1 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for MYPT1 siRNA (h): sc-37240, MYPT1 siRNA (m): sc-37241, MYPT1 shRNA Plasmid (h): sc-37240-SH, MYPT1 shRNA Plasmid (m): sc-37241-SH, MYPT1 shRNA (h) Lentiviral Particles: sc-37240-V and MYPT1 shRNA (m) Lentiviral Particles: sc-37241-V.

Molecular Weight of p-MYPT1: 130 kDa.

SELECT PRODUCT CITATIONS

1. Rikitake, Y., et al. 2005. Inhibition of Rho kinase (ROCK) leads to increased cerebral blood flow and stroke protection. Stroke 36: 2251-2257.
2. Yoneda, A., et al. 2005. The Rho kinases I and II regulate different aspects of myosin II activity. J. Cell Biol. 170: 443-453.
3. Musicki, B., et al. 2005. Erection capability is potentiated by long-term sildenafil treatment: role of blood flow-induced endothelial nitric-oxide synthase phosphorylation. Mol. Pharmacol. 68: 226-232.
4. Jin, H., et al. 2006. Tumorigenic transformation by CPI-17 through inhibition of a merlin phosphatase. Nature 442: 576-579.
5. Huang, J., et al. 2006. G_i-coupled receptors mediate phosphorylation of CPI-17 and MLC20 via preferential activation of the PI 3K/ILK pathway. Biochem. J. 396: 193-200.
6. Lee, J.H., et al. 2006. AKT phosphorylation is essential for Insulin-induced relaxation of rat vascular smooth muscle cells. Am. J. Physiol. Cell Physiol. 291: C1355-C1365.
7. Hashimoto, T., et al. 2006. Apelin stimulates myosin light chain phosphorylation in vascular smooth muscle cells. Arterioscler. Thromb. Vasc. Biol. 26: 1267-1272.
8. Guilluy, C., et al. 2008. Ste20-related kinase SLK phosphorylates Ser188 of RhoA to induce vasodilation in response to angiotensin II Type 2 receptor activation. Circ. Res. 102: 1265-1274.
9. Bregeon, J., et al. 2009. Angiotensin II induces RhoA activation through SHP2-dependent dephosphorylation of the RhoGAP p190A in vascular smooth muscle cells. Am. J. Physiol., Cell Physiol. 297: C1062-C1070.
10. Jiang, X., et al. 2010. HGAL, a germinal center specific protein, decreases lymphoma cell motility by modulation of the RhoA signaling pathway. Blood 116: 5217-5227.
11. Guilluy, C., et al. 2010. The Rho exchange factor Arhgef1 mediates the effects of angiotensin II on vascular tone and blood pressure. Nat. Med. 16: 183-190.
12. Rolli-Derkinderen, M., et al. 2010. RhoA phosphorylation induces Rac1 release from guanine dissociation inhibitor α and stimulation of vascular smooth muscle cell migration. Mol. Cell. Biol. 30: 4786-4796.
13. Xie, L., et al. 2011. Involvement of Rho-kinase in collar-induced vasoconstriction and vascular hypersensitivity to serotonin in rat carotid. Int. J. Cardiol. 148: 168-173.

STORAGE

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

RESEARCH USE

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