

# p-MYPT1 (F-11): sc-377531

## 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 promoter 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<sup>2+</sup> sensitization of smooth muscle contraction. This inhibition is modulated through phosphorylation of MYPT1 by a ZIP-like kinase, which associates with MYPT1 and phosphorylates the inhibitory site in smooth muscle. The phosphorylation of MYPT1 by protein kinase C results in altered dephosphorylation 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 sites on the amino-terminus of MYPT1. A novel isoform of MYPT1, MYPT2, also interacts with PP1c. 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.

## REFERENCES

- Kimura, K., et al. 1996. Regulation of myosin phosphatase by Rho and Rho-associated kinase (Rho-kinase). *Science* 273: 245-248.
- Takahashi, N., et al. 1997. Localization of the gene coding for myosin phosphatase, target subunit 1 (MYPT1) to human chromosome 12q15-q21. *Genomics* 44:150-152.

## CHROMOSOMAL LOCATION

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

## SOURCE

p-MYPT1 (F-11) is a mouse monoclonal antibody epitope corresponding to a short amino acid sequence containing Ser 695 phosphorylated MYPT1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

p-MYPT1 (F-11) is available conjugated to agarose (sc-377531 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-377531 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377531 PE), fluorescein (sc-377531 FITC), Alexa Fluor® 488 (sc-377531 AF488), Alexa Fluor® 546 (sc-377531 AF546), Alexa Fluor® 594 (sc-377531 AF594) or Alexa Fluor® 647 (sc-377531 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377531 AF680) or Alexa Fluor® 790 (sc-377531 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-377531 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

p-MYPT1 (F-11) is recommended for detection of Ser 695 phosphorylated MYPT1 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), 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).

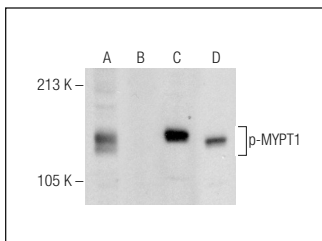
p-MYPT1 (F-11) is also recommended for detection of correspondingly phosphorylated MYPT1 in additional species, including avian.

Suitable for use as control antibody for MYPT1 siRNA (h): sc-37240, MYPT1 siRNA (m): sc-37241, MYPT1 siRNA (r): sc-156101, MYPT1 shRNA Plasmid (h): sc-37240-SH, MYPT1 shRNA Plasmid (m): sc-37241-SH, MYPT1 shRNA Plasmid (r): sc-156101-SH, MYPT1 shRNA (h) Lentiviral Particles: sc-37240-V, MYPT1 shRNA (m) Lentiviral Particles: sc-37241-V and MYPT1 shRNA (r) Lentiviral Particles: sc-156101-V.

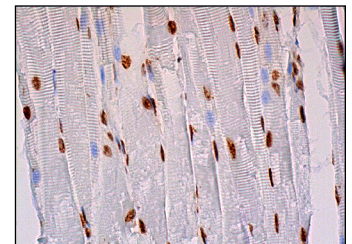
Molecular Weight of p-MYPT1: 130 kDa.

Positive Controls: HeLa + Calyculin A cell lysate: sc-2271 or HeLa whole cell lysate: sc-2200.

## DATA



Western blot analysis of MYPT1 phosphorylation in untreated (A, C) and lambda protein phosphatase (sc-200312A) treated (B, D) HeLa whole cell lysates. Antibodies tested include p-MYPT1 (F-11): sc-377531 (A, B) and MYPT1 (H-130): sc-25618 (C, D).



p-MYPT1 (F-11): sc-377531. Immunoperoxidase staining of formalin fixed, paraffin-embedded human skeletal muscle tissue showing nuclear staining of myocytes.

## SELECT PRODUCT CITATIONS

- Xiong, S., et al. 2017. Activation of transient receptor potential melastatin subtype 8 attenuates cold-induced hypertension through ameliorating vascular mitochondrial dysfunction. *J. Am. Heart Assoc.* 6 pii: e005495.

## 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.

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