SANTA CRUZ BIOTECHNOLOGY, INC.

# MYL9/MYL12A/B (D-9): sc-48414

SANTA CRUZ BIOTECHNOLOGY
The Power to Question

## BACKGROUND

Myosin is a highly conserved, ubiquitously expressed protein that interacts with Actin to generate the force for cellular movements. Conventional myosins are hexameric proteins consisting of two heavy chain subunits, a pair of non-phosphorylatable light chain subunits and a pair of phosphorylatable light chain subunits. Three general classes of Myosin have been cloned: smooth muscle myosins, striated muscle myosins and non-muscle myosins. Myosin regulatory light chains, including MYL12A (also known as MRLC3 or MLCB), MYL12B (also known as MRLC2) and MYL9 (also known as LC20, MLC2, MRLC1 or MYRL2), regulate contraction in smooth muscle and non-muscle cells via phosphorylation by Myosin light chain kinase (MLCK). Phosphorylation of myosin regulatory light chains, catalyzed by MLCK in the presence of calcium and calmodulin, increases the Actin-activated myosin ATPase activity, thereby regulating the contractile activity. Myosin light chain is also located in striated skeletal muscle, where its function remains undefined.

## REFERENCES


1. Kumar, C.C., et al. 1989. Characterization and differential expression of human vascular smooth muscle Myosin light chain 2 isoform in nonmuscle cells. Biochemistry 28: 4027-4035.
2. Szczesna-Cordary, D., et al. 2005. The E22K mutation of Myosin RLC that causes familial hypertrophic cardiomyopathy increases calcium sensitivity of force and ATPase in transgenic mice. J. Cell Sci. 118: 3675-3683.
3. Kolodney, M.S., et al. 1999. $Ca^{2+}$-independent Myosin II phosphorylation and contraction in chicken embryo fibroblasts. J. Physiol. 515: 87-92.
4. Sward, K., et al. 2000. Inhibition of Rho-associated kinase blocks agonist-induced $Ca^{2+}$ sensitization of Myosin phosphorylation and force in guinea-pig ileum. J. Physiol. 522: 33-49.


## SOURCE

MYL9/MYL12A/B (D-9) is a mouse monoclonal antibody raised against amino acids 1-172 representing full length MYL12A 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.

## APPLICATIONS

MYL9/MYL12A/B (D-9) is recommended for detection of the myosin regulatory light chains encoded by MYL9, MYL12A, MYL12B and the LOC391722 protein of human origin, Mylc2b, Myl9 and Myl12a of mouse origin and Mrlcb and Myl9 of rat 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).

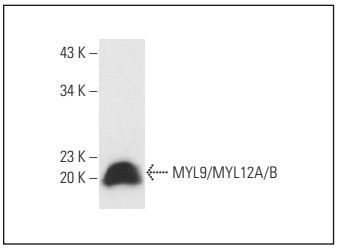
Molecular Weight of MYL9/MRLC2/MRCL3: 20 kDa.

Positive Controls: Sol8 cell lysate: sc-2249, $BC_3H1$ cell lysate: sc-2299 or A-10 cell lysate: sc-3806.

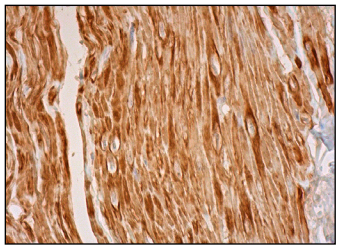
## STORAGE

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

## DATA




MYL9/MYL12A/B (D-9): sc-48414. Western blot analysis of MYL9/MYL12A/B expression in A-10 whole cell lysate.



MYL9/MYL12A/B (D-9): sc-48414. Immunoperoxidase staining of formalin fixed, paraffin-embedded human smooth muscle tissue showing cytoplasmic staining of smooth muscle cells.

## SELECT PRODUCT CITATIONS


1. de Jong, E.P., et al. 2010. Quantitative proteomics reveals Myosin and Actin as promising saliva biomarkers for distinguishing pre-malignant and malignant oral lesions. PLoS ONE 5: e11148.
2. Pessac, B., et al. 2011. Hematopoietic progenitors express embryonic stem cell and germ layer genes. C. R. Biol. 334: 300-306.
3. Hu, A., et al. 2014. 4-amino-2-trifluoromethyl-phenyl retinate inhibits the migration of BGC-823 human gastric cancer cells by downregulating the phosphorylation level of MLC II. Oncol. Rep. 32: 1473-1480.
4. Liu, Z., et al. 2017. Melatonin inhibits colon cancer RKO cell migration by downregulating Rho-associated protein kinase expression via the p38/MAPK signaling pathway. Mol. Med. Rep. 16: 9383-9392.
5. Carlson, D.A., et al. 2018. Targeting Pim kinases and DAPK3 to control hypertension. Cell Chem. Biol. 25: 1195-1207.
6. Matsui, T.S. and Deguchi, S. 2019. Spatially selective Myosin regulatory light chain regulation is absent in dedifferentiated vascular smooth muscle cells but is partially induced by Fibronectin and Klf4. Am. J. Physiol., Cell Physiol. 316: C509-C521.
7. Zheng, H., et al. 2020. $Na^+/Ca^{2+}$ exchange and pacemaker activity of interstitial cells of Cajal. Front. Physiol. 11: 230.


## RESEARCH USE

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