SANTA CRUZ BIOTECHNOLOGY, INC.

MYL3 (MLM527): sc-58804

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Myosin, the major component of thick muscle filaments, is a long asymmetric molecule containing a globular head and a long tail. Activation of smooth and cardiac/ventricular muscle primarily involves pathways which increase calcium and myosin phosphorylation, resulting in contraction. Myosin in vertebrate striated muscle is composed of two heavy chains and four light chains. There are two distinct types of light chains: the phosphorylatable, regulatory or MLC2 type; and the nonphosphorylatable, alkali or MLC1 and MLC3 types. Myosin light chain phosphatase acts to regulate muscle contraction by dephosphorylating activated myosin light chain. The role of myosin alkali light chains in vertebrate skeletal muscle is poorly understood, although alkali light chains in smooth muscle may be involved with the active site of myosin. Several isoforms of myosin alkali light chains have been identified, encoded by a family of myosin light chain genes. Each is associated with different muscle types. Human myosin light chain can be used as a cardiac marker. Myosin light chain 3, encoded by MYL3, is an alkali light chain also referred to as both the ventricular isoform (MLC1v) and slow skeletal muscle isoform. Myosin light chain 3 proteins in human and mouse share 91% sequence identity overall.

REFERENCES

1. Barton, P.J. and Buckingham, M.E. 1985. The myosin alkali light chain proteins and their genes. Biochem. J. 231: 249-261.
2. Seidel, U., et al. 1987. The complete nucleotide sequences of cDNA clones coding for human myosin light chains 1 and 3. Nucleic Acids Res. 15: 4989.
3. Cohen-Haguenauer, O., et al. 1988. Assignment of the human fast skeletal muscle myosin alkali light chains gene (MLC1F/MLC3F) to 2q 32.1-2qter. Hum. Genet. 78: 65-70.
4. Katoh, H., et al. 1992. Development of an immunoradiometric assay kit for ventricular Myosin light chain I with monoclonal antibodies. Clin. Chem. 38: 170-171.
5. Sanbe, A., et al. 1999. Abnormal cardiac structure and function in mice expressing nonphosphorylatable cardiac regulatory myosin light chain 2. J. Biol. Chem. 274: 21085-21094.
6. Davis, J.S., et al. 2001. The overall pattern of cardiac contraction depends on a spatial gradient of myosin regulatory light chain phosphorylation. Cell 107: 631-641.
7. Yamashita, H., et al. 2003. Myosin light chain isoforms modify force-generating ability of cardiac myosin by changing the kinetics of Actin-myosin interaction. Cardiovasc. Res. 60: 580-588.
8. Bicer, S. and Reiser, P.J. 2004. Myosin light chain 1 isoforms in slow fibers from global and orbital layers of canine rectus muscles. Invest. Ophthalmol. Vis. Sci. 45: 138-143.

CHROMOSOMAL LOCATION

Genetic locus: MYL3 (human) mapping to 3p21.31; Myl3 (mouse) mapping to 9 F3.

SOURCE

MYL3 (MLM527) is a mouse monoclonal antibody raised against MYL3 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2b} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

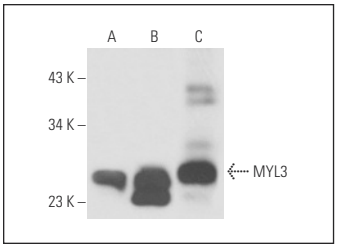
MYL3 (MLM527) is recommended for detection of ventricular myosin light chain 3 of mouse, rat, human, bovine and porcine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for MYL3 siRNA (h): sc-44542, MYL3 siRNA (m): sc-61054, MYL3 shRNA Plasmid (h): sc-44542-SH, MYL3 shRNA Plasmid (m): sc-61054-SH, MYL3 shRNA (h) Lentiviral Particles: sc-44542-V and MYL3 shRNA (m) Lentiviral Particles: sc-61054-V.

Molecular Weight of MYL3: 25 kDa.

Positive Controls: RD whole cell lysate: sc-364791, mouse heart extract: sc-2254 or rat skeletal muscle extract: sc-364810.

DATA



MYL3 (MLM527): sc-58804. Western blot analysis of MYL3 expression in RD (**A**) whole cell lysate and rat skeletal muscle (**B**) and mouse heart (**C**) tissue extracts.

SELECT PRODUCT CITATIONS

1. Rahimov, F., et al. 2011. Gene expression profiling of skeletal muscles treated with a soluble activin type IIB receptor. Physiol. Genomics 43: 398-407.
2. Figueiredo-Freitas, C., et al. 2015. S-nitrosylation of sarcomeric proteins depresses myofilament Ca^{2+} sensitivity in intact cardiomyocytes. Antioxid. Redox Signal. 23: 1017-1034.

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.