SANTA CRUZ BIOTECHNOLOGY, INC.

MYL3 siRNA (h): sc-44542

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 de-phosphorylating 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., et al. 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 2q32.1-2qter. 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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

MYL3 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MYL3 shRNA Plasmid (h): sc-44542-SH and MYL3 shRNA (h) Lentiviral Particles: sc-44542-V as alternate gene silencing products.

For independent verification of MYL3 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-44542A, sc-44542B and sc-44542C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MYL3 siRNA (h) is recommended for the inhibition of MYL3 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

MYL3 (MLM527): sc-58804 is recommended as a control antibody for monitoring of MYL3 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MYL3 gene expression knockdown using RT-PCR Primer: MYL3 (h)-PR: sc-44542-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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