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# Tropomyosin $\beta$ siRNA (h): sc-43478

## BACKGROUND

Tropomyosin  $\beta$ , also known as TPM2 or TMSB, is a 284 amino acid protein that localizes to both the cytoplasm and the cytoskeleton and belongs to the Tropomyosin family of structural proteins. Existing as a heterodimer with a Tropomyosin  $\alpha$  protein, Tropomyosin  $\beta$  functions to bind Actin filaments in muscle and non-muscle cells and, via this binding, plays a central role in the regulation of striated muscle contraction and in the stabilization of cytoskeletal Actin filaments. Tropomyosin  $\beta$  is expressed as multiple alternatively spliced isoforms and is present in primary breast cancer tissues, suggesting a role in tumor formation and metastasis. Defects in the gene encoding Tropomyosin  $\beta$  are the cause of nemaline myopathy type 4 (NEM4) and distal arthrogyriposis type 1 (DA1), the former of which is a form of congenital myopathy and the latter of which is a form of inherited multiple congenital contractures.

## REFERENCES

- Holtzer, M.E., et al. 1992.  $\beta$   $\beta$  homodimers exist in native rabbit skeletal muscle Tropomyosin and increase after denaturation-renaturation. *Protein Sci.* 1: 335-341.
- Hunt, C.C., et al. 1995. Assignment of the human  $\beta$  Tropomyosin gene (TPM2) to band 9p13 by fluorescence *in situ* hybridisation. *Cytogenet. Cell Genet.* 71: 94-95.
- Donner, K., et al. 2002. Mutations in the  $\beta$ -Tropomyosin (TPM2) gene—a rare cause of nemaline myopathy. *Neuromuscul. Disord.* 12: 151-158.
- Tajsharghi, H., et al. 2007. Congenital myopathy with nemaline rods and cap structures caused by a mutation in the  $\beta$ -Tropomyosin gene (TPM2). *Arch. Neurol.* 64: 1334-1338.
- Robinson, P., et al. 2007. Mutations in fast skeletal troponin I, troponin T, and  $\beta$ -Tropomyosin that cause distal arthrogyriposis all increase contractile function. *FASEB J.* 21: 896-905.
- Tajsharghi, H., et al. 2007. Distal arthrogyriposis and muscle weakness associated with a  $\beta$ -tropomyosin mutation. *Neurology* 68: 772-775.
- Nilsson, J. and Tajsharghi, H. 2008.  $\beta$ -Tropomyosin mutations alter Tropomyosin isoform composition. *Eur. J. Neurol.* 15: 573-578.

## CHROMOSOMAL LOCATION

Genetic locus: TPM2 (human) mapping to 9p13.3.

## PRODUCT

Tropomyosin  $\beta$  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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Tropomyosin shRNA Plasmid (h): sc-43478-SH and Tropomyosin  $\beta$  shRNA (h) Lentiviral Particles: sc-43478-V as alternate gene silencing products.

For independent verification of Tropomyosin  $\beta$  (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-43478A, sc-43478B and sc-43478C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

Tropomyosin  $\beta$  siRNA (h) is recommended for the inhibition of Tropomyosin  $\beta$  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  $\mu$ M in 66  $\mu$ l. 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

Tropomyosin  $\beta$  (3C8): sc-293374 is recommended as a control antibody for monitoring of Tropomyosin  $\beta$  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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Tropomyosin  $\beta$  gene expression knockdown using RT-PCR Primer: Tropomyosin  $\beta$  (h)-PR: sc-43478-PR (20  $\mu$ l). 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.