## SANTA CRUZ BIOTECHNOLOGY, INC.

# MESDC2 shRNA Plasmid (m): sc-149371-SH



### BACKGROUND

MESDC2 (mesoderm development candidate 2), also known as BOCA or MESD, is a 234 amino acid endoplasmic reticulum protein belonging to the MESD family. Considered a chaperone protein, MESDC2 specifically assists in folding  $\beta$ -propeller/EGF modules within the family of low-density lipoprotein receptors (LDLRs) through N- and C-terminal unstructured regions. MESDC2 modulates the Wnt pathway by chaperoning coreceptors LRP5 and LRP6 to the plasma membrane, and is essential for mesoderm induction and embryonic polarity. The gene encoding MESDC2 maps to human chromosome 15, which houses over 700 genes and comprises nearly 3% of the human genome. Angelman syndrome, Prader-Willi syndrome, Tay-Sachs disease and Marfan syndrome are all associated with defects in chromosome 15-localized genes.

#### REFERENCES

- Nagase, T., Miyajima, N., Tanaka, A., Sazuka, T., Seki, N., Sato, S., Tabata, S., Ishikawa, K., Kawarabayasi, Y. and Kotani, H. 1995. Prediction of the coding sequences of unidentified human genes. III. The coding sequences of 40 new genes (KIAA0081-KIAA0120) deduced by analysis of cDNA clones from human cell line KG-1. DNA Res. 2: 37-43.
- Wines, M.E., Lee, L., Katari, M.S., Zhang, L., DeRossi, C., Shi, Y., Perkins, S., Feldman, M., McCombie, W.R. and Holdener, B.C. 2001. Identification of mesoderm development (mesd) candidate genes by comparative mapping and genome sequence analysis. Genomics 72: 88-98.
- 3. Culi, J. and Mann, R.S. 2003. Boca, an endoplasmic reticulum protein required for wingless signaling and trafficking of LDL receptor family members in *Drosophila*. Cell 112: 343-354.
- Hsieh, J.C., Lee, L., Zhang, L., Wefer, S., Brown, K., DeRossi, C., Wines, M.E., Rosenquist, T. and Holdener, B.C. 2003. Mesd encodes an LRP5/6 chaperone essential for specification of mouse embryonic polarity. Cell 112: 355-367.
- Veltman, I.M., Vreede, L.A., Cheng, J., Looijenga, L.H., Janssen, B., Schoenmakers, E.F., Yeh, E.T. and van Kessel, A.G. 2005. Fusion of the SUMO/Sentrin-specific protease 1 gene SENP1 and the embryonic polarity-related mesoderm development gene MESDC2 in a patient with an infantile teratoma and a constitutional t(12;15)(q13;q25). Hum. Mol. Genet. 14: 1955-1963.
- 6. Li, Y., Lu, W., He, X. and Bu, G. 2006. Modulation of LRP6-mediated Wnt signaling by molecular chaperone Mesd. FEBS Lett. 580: 5423-5428.
- Köhler, C., Andersen, O.M., Diehl, A., Krause, G., Schmieder, P. and Oschkinat, H. 2006. The solution structure of the core of mesoderm development (MESD), a chaperone for members of the LDLR-family. J. Struct. Funct. Genomics 7: 131-138.
- Chen, J., Liu, C.C., Li, Q., Nowak, C., Bu, G. and Wang, J. 2011. Two structural and functional domains of MESD required for proper folding and trafficking of LRP5/6. Structure 19: 313-323.

## PROTOCOLS

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

## CHROMOSOMAL LOCATION

Genetic locus: Mesdc2 (mouse) mapping to 7 D3.

## PRODUCT

MESDC2 shRNA Plasmid (m) is a target-specific lentiviral vector plasmid encoding a 19-25 nt (plus hairpin) shRNA designed to knock down gene expression. Each plasmid contains a puromycin resistance gene for the selection of cells stably expressing shRNA. Each vial contains 20 µg of lyophilized shRNA plasmid DNA. Suitable for up to 20 transfections. Also see MESDC2 siRNA (m): sc-149371 and MESDC2 shRNA (m) Lentiviral Particles: sc-149371-V as alternate gene silencing products.

## STORAGE AND RESUSPENSION

Store lyophilized shRNA plasmid DNA at 4° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at 4° C for short term storage or -80° C for long term storage. Avoid repeated freeze thaw cycles.

Resuspend lyophilized shRNA plasmid DNA in 200  $\mu$ l of the deionized water provided. Resuspension of the shRNA plasmid DNA in 200  $\mu$ l of deionized water makes a 0.1  $\mu$ g/ $\mu$ l solution in a 10 mM Tris, 1 mM EDTA buffered solution.

#### **APPLICATIONS**

MESDC2 shRNA Plasmid (m) is recommended for the inhibition of MESDC2 expression in mouse cells.

#### SUPPORT REAGENTS

For optimal shRNA Plasmid transfection efficiency, Santa Cruz Biotechnology's shRNA Plasmid Transfection Reagent: sc-108061 (0.2 ml) and shRNA Plasmid Transfection Medium: sc-108062 (20 ml) are recommended. Control shRNAs are available as 20 µg lyophilized plasmid DNA. Each encodes a scrambled shRNA sequence that will not lead to the specific degradation of any known cellular mRNA. Control shRNA Plasmids include: sc-108060, sc-108065 and sc-108066.

#### **RT-PCR REAGENTS**

Semi-quantitative RT-PCR may be performed to monitor MESDC2 gene expression knockdown using RT-PCR Primer: MESDC2 (m)-PR: sc-149371-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**

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.