

tuberin siRNA (m): sc-36763

BACKGROUND

Tuberous sclerosis (TSC) is a human genetic disorder characterized by mental retardation and the widespread development of benign and infrequently malignant tumors in a variety of tissues. Two different genetic loci have been linked to TSC; one of these loci, the tuberous sclerosis-2 gene (TSC2), encodes a protein 1,784 amino acids in length, called tuberin. tuberin exhibits a region of limited homology to the catalytic domain of Rap1 GAP. Subcellular fractionation studies have shown tuberin to be predominantly localized in membrane fractions. tuberin is capable of stimulating the intrinsic GTPase activity of Rap 1A, but not Rap 2, H-Ras, Rac or Rho. TSC2 maps to human chromosome 16 and is associated with several intragenic mutations in affected patients. The mouse homolog of the tuberin gene maps to chromosome 17 A3.3.

REFERENCES

1. Pizon, V., et al. 1988. Nucleotide sequence of a human cDNA encoding a Ras-related protein (rap1B). *Nucleic Acids Res.* 16: 7719.
2. Pizon, V., et al. 1988. Human cDNAs Rap 1 and Rap 2 homologous to the *Drosophila* gene Dras3 encode proteins closely related to Ras in the "effector" region. *Oncogene* 3: 201-204.
3. Frech, M., et al. 1990. Inhibition of GTPase activating protein stimulation of Ras-p21 GTPase by the Krev-1 gene product. *Science* 249: 169-171.

CHROMOSOMAL LOCATION

Genetic locus: Tsc2 (mouse) mapping to 17 A3.3.

PRODUCT

tuberin siRNA (m) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see tuberin shRNA Plasmid (m): sc-36763-SH and tuberin shRNA (m) Lentiviral Particles: sc-36763-V as alternate gene silencing products.

For independent verification of tuberin (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-36763A, sc-36763B and sc-36763C.

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

APPLICATIONS

tuberin siRNA (m) is recommended for the inhibition of tuberin expression in mouse 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 μ M in 66 μ 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

tuberin (E-9): sc-365103 is recommended as a control antibody for monitoring of tuberin 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 tuberin gene expression knockdown using RT-PCR Primer: tuberin (m)-PR: sc-36763-PR (20 μ l, 425 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Mukherjee, P., et al. 2008. Differential effects of energy stress on AMPK phosphorylation and apoptosis in experimental brain tumor and normal brain. *Mol. Cancer* 7: 37.
2. Jung, C.H., et al. 2013. Fisetin regulates obesity by targeting mTORC1 signaling. *J. Nutr. Biochem.* 24: 1547-1554.
3. Chen, X., et al. 2016. mTORC1 alters the expression of glycolytic genes by regulating KPNA2 abundances. *J. Proteomics* 136: 13-24.
4. Tong, X., et al. 2020. p53 positively regulates osteoprotegerin-mediated inhibition of osteoclastogenesis by downregulating TSC2-induced autophagy *in vitro*. *Differentiation* 114: 58-66.
5. Liang, S., et al. 2021. TP63 is significantly upregulated in diabetic kidney. *Int. J. Mol. Sci.* 22: 4070.
6. Liang, S., et al. 2021. A novel role of snail in regulating tuberin/AMPK pathways to promote renal fibrosis in the new mouse model of type II diabetes. *FASEB Bioadv.* 3: 730-743.

RESEARCH USE

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

PROTOCOLS

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