SANTA CRUZ BIOTECHNOLOGY, INC.

MAP LC3β siRNA (m): sc-43391

BACKGROUND

Microtubule-associated proteins (MAPs) regulate microtubule stability and play critical roles in neuronal development and in maintaining the balance between neuronal plasticity and rigidity. MAP-light chain 3 β (MAP LC3β) and MAP-light chain 3 α (MAP LC3α) are subunits of both MAP1A and MAP1B. MAP LC3β, a homolog of Apg8p, is essential for autophagy and associated to the autophagosome membranes after processing. Two forms of LC3β, the cytosolic LC3-I and the membrane-bound LC3-II, are produced post-translationally. LC3-I is formed by the removal of the C-terminal 22 amino acids from newly synthesized LC3β, followed by the conversion of a fraction of LC3-I into LC3-II. LC3 enhances fibronectin mRNA translation in ductus arteriosus cells through association with 60S ribosomes and binding to an AU-rich element in the 3' untranslated region of fibronectin mRNA. This facilitates sorting of Fibronectin mRNA onto rough endoplasmic reticulum and translation. MAP LC3β may also be involved in formation of autophagosomal vacuoles. It is expressed primarily in heart, testis, brain and skeletal muscle.

REFERENCES

1. Fink, J.K., et al. 1996. Human microtubule-associated protein 1A (MAP1A) gene: genomic organization, cDNA sequence, and developmental and tissue-specific expression. Genomics 35: 577-585.
2. Mann, S.S., et al. 1996. Gene localization and developmental expression of light chain 3: a common subunit of microtubule-associated protein 1A (MAP1A) and MAP1B. J. Neurosci. Res. 43: 535-544.

CHROMOSOMAL LOCATION

Genetic locus: Map1lc3b (mouse) mapping to 8 E1.

PRODUCT

MAP LC3β 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MAP LC3β shRNA Plasmid (m): sc-43391-SH and MAP LC3β shRNA (m) Lentiviral Particles: sc-43391-V as alternate gene silencing products.

For independent verification of MAP LC3β (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-43391A, sc-43391B and sc-43391C.

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.

RESEARCH USE

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

APPLICATIONS

MAP LC3β siRNA (m) is recommended for the inhibition of MAP LC3β 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 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

MAP LC3β (G-2): sc-271625 is recommended as a control antibody for monitoring of MAP LC3β 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 MAP LC3β gene expression knockdown using RT-PCR Primer: MAP LC3β (m)-PR: sc-43391-PR (20 µl, 428 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chang, C.P., et al. 2007. Concanavalin A induces autophagy in hepatoma cells and has a therapeutic effect in a murine *in situ* hepatoma model. Hepatology 45: 286-296.
2. Ding, Y., et al. 2010. TGFβ1 protects against mesangial cell apoptosis via induction of autophagy. J. Biol. Chem. 285: 37909-37919.
3. Tang, J.Y., et al. 2014. GDC-0980-induced apoptosis is enhanced by autophagy inhibition in human pancreatic cancer cells. Biochem. Biophys. Res. Commun. 453: 533-538.
4. Wang, X., et al. 2015. Capsid, membrane and NS3 are the major viral proteins involved in autophagy induced by Japanese encephalitis virus. Vet. Microbiol. 178: 217-229.
5. Nettesheim, A., et al. 2019. Transcriptome analysis reveals autophagy as regulator of TGFβ/Smad-induced fibrogenesis in trabecular meshwork cells. Sci. Rep. 9: 16092.
6. Kosic, M., et al. 2021. 3-methyladenine prevents energy stress-induced necrotic death of melanoma cells through autophagy-independent mechanisms. J. Pharmacol. Sci. 147: 156-167.

PROTOCOLS

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