SANTA CRUZ BIOTECHNOLOGY, INC.

MAP LC3β siRNA (h): sc-43390

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.
3. Zhou, B., et al. 1997. Microtubule-associated protein 1 light chain 3 is a Fibronectin mRNA-binding protein linked to mRNA translation in lamb vascular smooth muscle cells. J. Clin. Invest. 100: 3070-3082.

CHROMOSOMAL LOCATION

Genetic locus: MAP1LC3B (human) mapping to 16q24.2.

PRODUCT

MAP LC3β 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 MAP LC3β shRNA Plasmid (h): sc-43390-SH and MAP LC3β shRNA (h) Lentiviral Particles: sc-43390-V as alternate gene silencing products.

For independent verification of MAP LC3β (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-43390A, sc-43390B and sc-43390C.

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

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

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 (h)-PR: sc-43390-PR (20 µl, 501 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Vazquez-Martin, A., et al. 2009. Autophagy facilitates the development of breast cancer resistance to the anti-HER2 monoclonal antibody trastuzumab. PLoS ONE 4: e6251.
2. Blanchet, F.P., et al. 2010. Human immunodeficiency virus-1 inhibition of immunoamphisomes in dendritic cells impairs early innate and adaptive immune responses. Immunity 32: 654-669.
3. Zhang, N., et al. 2011. PARP and RIP 1 are required for autophagy induced by 11'-deoxyverticillin A, which precedes caspase-dependent apoptosis. Autophagy 7: 598-612.
4. Hung, T.H., et al. 2013. Autophagy in the human placenta throughout gestation. PLoS ONE 8: e83475.
5. Yoon, M.J., et al. 2014. Stronger proteasomal inhibition and higher CHOP induction are responsible for more effective induction of paraptosis by dimethoxycurcumin than curcumin. Cell Death Dis. 5: e1112.
6. Chauhan, S., et al. 2015. Pharmaceutical screen identifies novel target processes for activation of autophagy with a broad translational potential. Nat. Commun. 6: 8620.

RESEARCH USE

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