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# MAP LC3 $\beta$ 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  $\beta$  (MAP LC3 $\beta$ ) and MAP-light chain 3  $\alpha$  (MAP LC3 $\alpha$ ) are subunits of both MAP1A and MAP1B. MAP LC3 $\beta$ , a homolog of Apg8p, is essential for autophagy and associated to the autophagosome membranes after processing. Two forms of LC3 $\beta$ , 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 LC3 $\beta$ , 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 LC3 $\beta$  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 (human) mapping to 16q24.2.

## PRODUCT

MAP LC3 $\beta$  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 MAP LC3 $\beta$  shRNA Plasmid (h): sc-43390-SH and MAP LC3 $\beta$  shRNA (h) Lentiviral Particles: sc-43390-V as alternate gene silencing products.

For independent verification of MAP LC3 $\beta$  (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-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  $\mu$ 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.

## RESEARCH USE

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

## APPLICATIONS

MAP LC3 $\beta$  siRNA (h) is recommended for the inhibition of MAP LC3 $\beta$  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

MAP LC3 $\beta$  (G-2): sc-271625 is recommended as a control antibody for monitoring of MAP LC3 $\beta$  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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MAP LC3 $\beta$  gene expression knockdown using RT-PCR Primer: MAP LC3 $\beta$  (h)-PR: sc-43390-PR (20  $\mu$ l, 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. Pursiheimo, J.P., et al. 2009. Hypoxia-activated autophagy accelerates degradation of SQSTM1/p62. *Oncogene* 28: 334-344.
3. 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.
4. Chauhan, S., et al. 2015. Pharmaceutical screen identifies novel target processes for activation of autophagy with a broad translational potential. *Nat. Commun.* 6: 8620.
5. Wang, Y., et al. 2015. CGK733-induced LC3 II formation is positively associated with the expression of cyclin-dependent kinase inhibitor p21<sup>Waf1/Cip1</sup> through modulation of the AMPK and PERK/CHOP signaling pathways. *Oncotarget* 6: 39692-701.
6. Lu, Q., et al. 2015. Akt inhibition attenuates rasfonin-induced autophagy and apoptosis through the glycolytic pathway in renal cancer cells. *Cell Death Dis.* 6: e2005.

## PROTOCOLS

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