SANTA CRUZ BIOTECHNOLOGY, INC.

Atg13 siRNA (h): sc-97013

BACKGROUND

Atg13 (ATG13 autophagy related 13 homolog) is a 517 amino acid phosphoprotein belonging to the ATG13 metazoan family. Encoded by a gene that maps to human chromosome 11p11.2, Atg13 is conserved in chimpanzee, canine, bovine, mouse, rat, chicken and zebrafish. Atg13 functions as an autophagy factor required for autophagosome formation. Atg13 is a target of the TOR kinase signaling pathway, which mediates autophagy by controlling phosphorylation of Atg13 and ULK1, and by regulating the Atg13-ULK1-RB1CC1 complex. Phosphorylated by ULK1 and ULK2 via its C-terminus, the phosphorylation state of Atg13 depends on nutrient-rich conditions, with dephosphorylation occurring during starvation or following rapamycin treatment. Atg13 also functions as a component of another complex, the ULK1-Atg13 complex, which regulates Atg9 and Atg23 retrieval transport from the pre-autophagosomal structure.

REFERENCES

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2. Kabeya, Y., et al. 2005. Atg17 functions in cooperation with Atg1 and Atg13 in yeast autophagy. Mol. Biol. Cell 16: 2544-2553.
3. Mercer, C.A., et al. 2009. A novel, human Atg13 binding protein, Atg101, interacts with ULK1 and is essential for macroautophagy. Autophagy 5: 649-662.
4. Hosokawa, N., et al. 2009. Atg101, a novel mammalian autophagy protein interacting with Atg13. Autophagy 5: 973-979.
5. Ganley, I.G., et al. 2009. ULK1.ATG13.FIP200 complex mediates mTOR signaling and is essential for autophagy. J. Biol. Chem. 284: 12297-12305.
6. Hosokawa, N., et al. 2009. Nutrient-dependent mTORC1 association with the ULK1-Atg13-FIP200 complex required for autophagy. Mol. Biol. Cell 20: 1981-1991.
7. Jung, C.H., et al. 2009. ULK-Atg13-FIP200 complexes mediate mTOR signaling to the autophagy machinery. Mol. Biol. Cell 20: 1992-2003.
8. Chang, Y.Y. and Neufeld, T.P. 2009. An Atg1/Atg13 complex with multiple roles in TOR-mediated autophagy regulation. Mol. Biol. Cell 20: 2004-2014.

CHROMOSOMAL LOCATION

Genetic locus: ATG13 (human) mapping to 11p11.2.

PRODUCT

Atg13 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 Atg13 shRNA Plasmid (h): sc-97013-SH and Atg13 shRNA (h) Lentiviral Particles: sc-97013-V as alternate gene silencing products.

For independent verification of Atg13 (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-97013A, sc-97013B and sc-97013C.

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

Atg13 siRNA (h) is recommended for the inhibition of Atg13 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Atg13 gene expression knockdown using RT-PCR Primer: Atg13 (h)-PR: sc-97013-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chen, D., et al. 2013. CCCP-induced LC3 lipidation depends on Atg9 whereas FIP200/Atg13 and Beclin 1/Atg14 are dispensable. Biochem. Biophys. Res. Commun. 432: 226-230.
2. Jang, I.K., et al. 2014. B7-H1 inhibits T cell proliferation through MHC class II in human mesenchymal stem cells. Transplant. Proc. 46: 1638-1641.
3. Mohamud, Y., et al. 2020. Coxsackievirus infection induces a non-canonical autophagy independent of the ULK and PI3K complexes. Sci. Rep. 10: 19068.
4. Bhattacharya, A., et al. 2023. A lysosome membrane regeneration pathway depends on TBC1D15 and autophagic lysosomal reformation proteins. Nat. Cell Biol. 25: 685-698.

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.