

ULK1 siRNA (m): sc-44849

BACKGROUND

ULK1 and ULK2 (for UNC-51-like kinase) encode similar amino-terminal serine/threonine kinase domains, a proline/serine-rich (PS) domain, and a species conserved carboxyl-terminal domain. Both share homology with the UNC-51 kinase from *Caenorhabditis elegans* and the APG1 kinase in yeast, which are involved in axonal extension and growth, and autophagy, respectively. ULK1 maps to human chromosome 12q24.3 and is ubiquitously expressed. ULK2, also widely expressed, maps to mouse chromosome 11B1.3 and is expected to have a similar molecular weight as ULK1 in human. ULK1 and ULK2 are thought to auto-phosphorylate the PS domain *in vitro*, and the significant homology among vertebrates suggest that ULK1 and ULK2 are involved in the regulation of fundamental biological processes.

REFERENCES

1. Ogura, K., et al. 1994. *Caenorhabditis elegans* UNC-51 gene required for axonal elongation encodes a novel serine/threonine kinase. *Genes Dev.* 8: 2389-2400.
2. Matsuura, A., et al. 1997. apg1p, a novel protein kinase required for the autophagic process in *Saccharomyces cerevisiae*. *Gene* 192: 245-250.
3. Kuroyanagi, H., et al. 1998. Human ULK1, a novel serine/threonine kinase related to UNC-51 kinase of *Caenorhabditis elegans*: cDNA cloning, expression, and chromosomal assignment. *Genomics* 51: 76-85.

CHROMOSOMAL LOCATION

Genetic locus: Ulk1 (mouse) mapping to 5 F.

PRODUCT

ULK1 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 ULK1 shRNA Plasmid (m): sc-44849-SH and ULK1 shRNA (m) Lentiviral Particles: sc-44849-V as alternate gene silencing products.

For independent verification of ULK1 (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-44849A, sc-44849B and sc-44849C.

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

ULK1 siRNA (m) is recommended for the inhibition of ULK1 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

ULK1 (F-4): sc-390904 is recommended as a control antibody for monitoring of ULK1 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).

To ensure optimal results, the following support reagents are recommended:

1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ULK1 gene expression knockdown using RT-PCR Primer: ULK1 (m)-PR: sc-44849-PR (20 μ l, 570 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hong-Brown, L.Q., et al. 2017. FoxO1-AMPK-ULK1 regulates ethanol-induced autophagy in muscle by enhanced ATG14 association with the BECN1-PIK3C3 complex. *Alcohol. Clin. Exp. Res.* 41: 895-910.
2. Ouyang, C., et al. 2020. Autophagic degradation of KAT2A/GCN5 promotes directional migration of vascular smooth muscle cells by reducing TUBA/ α -Tubulin acetylation. *Autophagy* 16: 1753-1770.
3. Zhu, P., et al. 2020. A novel cochliquinone derivative, CoB1, regulates autophagy in *Pseudomonas aeruginosa* infection through the PAK1/Akt1/mTOR signaling pathway. *J. Immunol.* 205: 1293-1305.
4. Rahman, M.A., et al. 2021. Antioxidant compound, oxyresveratrol, inhibits APP production through the AMPK/ULK1/mTOR-mediated autophagy pathway in mouse cortical astrocytes. *Antioxidants* 10: 408.

RESEARCH USE

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