SANTA CRUZ BIOTECHNOLOGY, INC.

FKHRL1 siRNA (m) : sc-37888

BACKGROUND

FKHRL1 (forkhead in rhabdomyosarcoma-like 1), also known as FOXO3 (forkhead box O3) or FOXO3A, is a 673 amino acid transcriptional activator that belongs to the FKHR subfamily of forkhead transcription factors. Transcriptional activation of FKHR proteins is regulated by the serine/threonine kinase Akt1, which phosphorylates FKHRL1 at Threonine 32 and Serine 253. Phosphorylation by Akt1 negatively regulates FKHRL1 by promoting its export from the nucleus. Phosphorylated FKHRL1 associates with 14-3-3 proteins and this complex is retained in the cytoplasm. Growth factor withdrawal stimulates FKHRL1 dephosphorylation and nuclear translocation, leading to FKHR-induced gene-specific transcriptional activation. Within the nucleus, dephosphorylated FKHRL1 triggers apoptosis by inducing the expression of genes that are critical for cell death.

CHROMOSOMAL LOCATION

Genetic locus: Foxo3 (mouse) mapping to 10 B2.

PRODUCT

FKHRL1 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 FKHRL1 shRNA Plasmid (m): sc-37888-SH and FKHRL1 shRNA (m) Lentiviral Particles: sc-37888-V as alternate gene silencing products.

For independent verification of FKHRL1 (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-37888A, sc-37888B and sc-37888C.

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

FKHRL1 siRNA (m) is recommended for the inhibition of FKHRL1 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

FKHRL1 (D-12): sc-48348 is recommended as a control antibody for monitoring of FKHRL1 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 FKHRL1 gene expression knockdown using RT-PCR Primer: FKHRL1 (m) -PR: sc-37888-PR (20 µl, 437 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hori, Y.S., et al. 2013. Regulation of FOXOs and p53 by SIRT1 modulators under oxidative stress. PLoS ONE 8: e73875.
2. Jaitovich, A., et al. 2015. High CO_2 levels cause skeletal muscle atrophy via AMP-activated kinase (AMPK), FoxO3a protein, and muscle-specific ring finger protein 1 (MuRF1). J. Biol. Chem. 290: 9183-9194.
3. Zhao, Y., et al. 2015. GL-V9, a new synthetic flavonoid derivative, ameliorates DSS-induced colitis against oxidative stress by up-regulating Trx-1 expression via activation of AMPK/FOXO3a pathway. Oncotarget 6: 26291-26307.
4. Wang, Y., et al. 2015. FOXO1 mediates RANKL-induced osteoclast formation and activity. J. Immunol. 194: 2878-2887.
5. Liu, P., et al. 2016. Dihydromyricetin improves hypobaric hypoxia-induced memory impairment via modulation of SIRT3 signaling. Mol. Neurobiol. 53: 7200-7212.
6. Yang, M., et al. 2016. From the cover: autophagy induction contributes to cadmium toxicity in mesenchymal stem cells via AMPK/FOXO3a/BECN1 signaling. Toxicol. Sci. 154: 101-114.
7. Wang, C., et al. 2018. PARP1 promote autophagy in cardiomyocytes via modulating FOXO3a transcription. Cell Death Dis. 9: 1047.
8. Shi, W.Z., et al. 2019. GCN2 suppression attenuates cerebral ischemia in mice by reducing apoptosis and endoplasmic reticulum (ER) stress through the blockage of FoxO3a-regulated Ros production. Biochem. Biophys. Res. Commun. 516: 285-292.
9. Radigan, K.A., et al. 2019. Influenza A virus infection induces muscle wasting via IL-6 regulation of the E3 ubiquitin ligase Atrogin-1. J. Immunol. 202: 484-493.
10. Zhao, G., et al. 2021. Interleukin-18 accelerates cardiac inflammation and dysfunction during ischemia/reperfusion injury by transcriptional activation of CXCL16. Cell. Signal. 87: 110141.

RESEARCH USE

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