SANTA CRUZ BIOTECHNOLOGY, INC.

ERK 5 siRNA (m): sc-35340

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The Power to Question

BACKGROUND

The activation of signal transduction pathways by growth factors, hormones and neurotransmitters is mediated through two closely related MAP kinases, p44 and p42, designated extracellular-signal related kinase 1 (ERK 1) and ERK 2, respectively. ERK proteins are regulated by dual phosphorylation at specific tyrosine and threonine sites mapping within a characteristic Thr-Glu-Tyr motif. Phosphorylation at both the Thr and Tyr residues is required for full enzymatic activation. In response to activation, MAP kinases phosphorylate downstream components on serine and threonine. Upstream MAP kinase regulators include MAP kinase kinase (MEK), MEK kinase and Raf-1. The ERK family has three additional members: ERK 3, ERK 5 and ERK 6.

CHROMOSOMAL LOCATION

Genetic locus: Mapk7 (mouse) mapping to 11 B2.

PRODUCT

ERK 5 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 ERK 5 shRNA Plasmid (m): sc-35340-SH and ERK 5 shRNA (m) Lentiviral Particles: sc-35340-V as alternate gene silencing products.

For independent verification of ERK 5 (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-35340A, sc-35340B and sc-35340C.

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

ERK 5 siRNA (m) is recommended for the inhibition of ERK 5 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

ERK 5 (C-7): sc-398015 is recommended as a control antibody for monitoring of ERK 5 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 ERK 5 gene expression knockdown using RT-PCR Primer: ERK 5 (m)-PR: sc-35340-PR (20 µl, 521 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zou, G.M., et al. 2006. LIGHT induces differentiation of mouse embryonic stem cells associated with activation of ERK5. Oncogene 25: 463-469.
2. Jiang, J., et al. 2015. ERK5 signalling pathway is essential for fluid shear stress-induced Cox-2 gene expression in MC3T3-E1 osteoblast. Mol. Cell. Biochem. 406: 237-243.
3. Bin, G., et al. 2016. Fluid shear stress suppresses TNF-α-induced apoptosis in MC3T3-E1 cells: involvement of ERK5-Akt-FoxO3a-Bim/FasL signaling pathways. Exp. Cell Res. 343: 208-217.
4. Xia, G., et al. 2017. Mangiferin protects osteoblast against oxidative damage by modulation of ERK5/Nrf2 signaling. Biochem. Biophys. Res. Commun. 491: 807-813.
5. Jo, M., et al. 2019. Inhibition of MEK 5 suppresses TDP-43 toxicity via the mTOR-independent activation of the autophagy-lysosome pathway. Biochem. Biophys. Res. Commun. 513: 925-932.
6. Guo, T.M., et al. 2019. Extracellular regulated kinase 5 mediates osteoporosis through modulating viability and apoptosis of osteoblasts in ovariectomized rats. Biosci. Rep. 39: BSR20190432.
7. Zhang, B., et al. 2019. ERK5 negatively regulates Krüppel-like factor 4 and promotes osteogenic lineage cell proliferation in response to MEK5 overexpression or fluid shear stress. Connect. Tissue Res. 21: 1-12.

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.