SANTA CRUZ BIOTECHNOLOGY, INC.

ERK 2 siRNA (h): sc-35335

BACKGROUND

Mitogen-activated protein kinase (MAPK) signaling pathways involve two closely related MAP kinases, known as extracellular signal-related kinase 1 (ERK 1, p44) and 2 (ERK 2, p42). Growth factors, steroid hormones, G protein-coupled receptor ligands and neurotransmitters can initiate MAPK signaling pathways. Activation of ERK 1 and ERK 2 requires phosphorylation by upstream kinases such as MAP kinase kinase (MEK), MEK kinase and Raf-1. ERK 1 and ERK 2 phosphorylation can occur at specific tyrosine and threonine sites mapping within consensus motifs that include the threonine-glutamate-tyrosine motif. ERK activation leads to dimerization with other ERKs and subsequent localization to the nucleus. Active ERK dimers phosphorylate serine and threonine residues on nuclear proteins and influence a host of responses that include proliferation, differentiation, transcription regulation and development. The human ERK 2 gene maps to chromosome 22q11.21 and encodes a 360 amino acid protein.

CHROMOSOMAL LOCATION

Genetic locus: MAPK1 (human) mapping to 22q11.21.

PRODUCT

ERK 2 siRNA (h) is a target-specific 19-25 nt siRNA 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 2 shRNA Plasmid (h): sc-35335-SH and ERK 2 shRNA (h) Lentiviral Particles: sc-35335-V as alternate gene silencing products.

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 2 siRNA (h) is recommended for the inhibition of ERK 2 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.

GENE EXPRESSION MONITORING

ERK 2 (D-2): sc-1647 is recommended as a control antibody for monitoring of ERK 2 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 ERK 2 gene expression knockdown using RT-PCR Primer: ERK 2 (h)-PR: sc-35335-PR (20 µl, 453 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Fong, Y.C., et al. 2008. Osteoblast-derived TGF-β1 stimulates IL-8 release through AP-1 and NFκB in human cancer cells. J. Bone Miner. Res. 23: 961-970.
2. Choi, Y.H., et al. 2011. The extracellular signal-regulated kinase mitogen-activated protein kinase/ribosomal S6 protein kinase 1 cascade phosphorylates cAMP response element-binding protein to induce MUC5B gene expression via D-prostanoid receptor signaling. J. Biol. Chem. 286: 34199-34214.
3. Lai, H.C., et al. 2012. Activation of NK cell cytotoxicity by the natural compound 2,3-butanediol. J. Leukoc. Biol. 92: 807-814.
4. Singh, N.S., et al. 2013. Nicotinic acetylcholine receptor antagonists alter the function and expression of serine racemase in PC-12 and 1321N1 cells. Cell. Signal. 25: 2634-2645.
5. Nikhil, K., et al. 2014. Pterostilbene-isothiocyanate conjugate suppresses growth of prostate cancer cells irrespective of androgen receptor status. PLoS ONE 9: e93335.
6. Xie, B., et al. 2015. DDR2 facilitates hepatocellular carcinoma invasion and metastasis via activating ERK signaling and stabilizing SNAIL1. J. Exp. Clin. Cancer Res. 34: 101.
7. Lu, C.C., et al. 2016. Immunomodulatory properties of medicinal mushrooms: differential effects of water and ethanol extracts on NK cell-mediated cytotoxicity. Innate Immun. 22: 522-533.
8. Liang, Z., et al. 2017. DDR2 facilitates papillary thyroid carcinoma epithelial mesenchymal transition by activating ERK2/Snail1 pathway. Oncol. Lett. 14: 8114-8121.
9. Wang, L., et al. 2018. CVB3 nonstructural 2A protein modulates SREBP1a signaling via the MEK/ERK pathway. J. Virol. 92: e01060-18.
10. Zhang, X., et al. 2019. Interaction between p53 and Ras signaling controls cisplatin resistance via HDAC4- and HIF-1α-mediated regulation of apoptosis and autophagy. Theranostics 9: 1096-1114.

RESEARCH USE

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