SANTA CRUZ BIOTECHNOLOGY, INC.

ERK 1 siRNA (h): sc-29307

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 1 gene maps to chromosome 16p11.2 and encodes a 379 amino acid protein that shares 83% sequence identity to ERK 2.

CHROMOSOMAL LOCATION

Genetic locus: MAPK3 (human) mapping to 16p11.2.

PRODUCT

ERK 1 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 1 shRNA Plasmid (h): sc-29307-SH and ERK 1 shRNA (h) Lentiviral Particles: sc-29307-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 1 siRNA (h) is recommended for the inhibition of ERK 1 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.

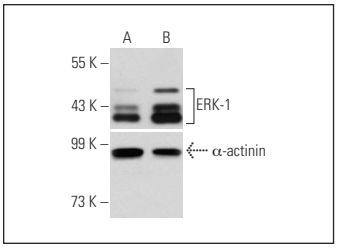
GENE EXPRESSION MONITORING

ERK 1 (G-8): sc-271269 is recommended as a control antibody for monitoring of ERK 1 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 1 gene expression knockdown using RT-PCR Primer: ERK 1 (h)-PR: sc-29307-PR (20 µl, 539 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



ERK 1 shRNA Plasmid (h): sc-29307-SH. Western blot analysis of human ERK-1 expression in ERK-1 shRNA Plasmid transfected (**A**) and control shRNA Plasmid transfected (**B**) A-431 cells. Blot probed with ERK-1 (C-16): sc-93. α-actinin (H-2): sc-17829 used as specificity and loading control.

SELECT PRODUCT CITATIONS

1. Kim, H.J., et al. 2008. The role of Nox4 in oxidative stress-induced MUC5AC overexpression in human airway epithelial cells. Am. J. Respir. Cell Mol. Biol. 39: 598-609.
2. Yamaguchi, R., et al. 2016. Roles of myeloperoxidase and GAPDH in interferon-γ production of GM-CSF-dependent macrophages. Heliyon 2: e00080.
3. Mehdizadeh, A., et al. 2017. Liposome-mediated RNA interference delivery against ERK 1 and ERK 2 does not equally promote chemosensitivity in human hepatocellular carcinoma cell line Hep G2. Artif. Cells Nanomed. Biotechnol. 45: 1612-1619.
4. Wang, L., et al. 2018. CVB3 nonstructural 2A protein modulates SREBP1a signaling via the MEK/ERK pathway. J. Virol. 92: e01060-18.
5. 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.
6. Hsieh, M.H., et al. 2020. Tomatidine represses invasion and migration of human osteosarcoma U2OS and HOS cells by suppression of Presenilin 1 and c-Raf-MEK-ERK pathway. Molecules 25: 326.

RESEARCH USE

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