SANTA CRUZ BIOTECHNOLOGY, INC.

ERK 2 siRNA (m): sc-35336

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.

REFERENCES

1. Boulton, T.G., et al. 1991. ERKs: a family of protein-serine/threonine kinases that are activated and tyrosine phosphorylated in response to Insulin and NGF. Cell 65: 663-675.
2. Crews, C.M., et al. 1992. The primary structure of MEK, a protein kinase that phosphorylates the ERK gene product. Science 258: 478-480.

CHROMOSOMAL LOCATION

Genetic locus: Mapk1 (mouse) mapping to 16 A3.

PRODUCT

ERK 2 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 2 shRNA Plasmid (m): sc-35336-SH and ERK 2 shRNA (m) Lentiviral Particles: sc-35336-V as alternate gene silencing products.

For independent verification of ERK 2 (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-35336A, sc-35336B and sc-35336C.

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 (m) is recommended for the inhibition of ERK 2 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 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 (m)-PR: sc-35336-PR (20 µl, 462 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Longuet, C., et al. 2005. Extracellularly regulated kinases 1/2 (p44/42 mitogen-activated protein kinases) phosphorylate synapsin I and regulate Insulin secretion in the MIN6 β-cell line and islets of Langerhans. Endocrinology 146: 643-654.
2. Chandrakesan, P., et al. 2010. Novel changes in NFκB activity during progression and regression phases of hyperplasia: role of MEK, ERK, and p38. J. Biol. Chem. 285: 33485-33498.
3. Ahmad, N., et al. 2012. Relaxin induces matrix-metalloproteinases-9 and -13 via RXFP1: induction of MMP-9 involves the PI3K, ERK, Akt and PKC-ζ pathways. Mol. Cell. Endocrinol. 363: 46-61.
4. Than, A., et al. 2013. Control of adipogenesis by the autocrine interplays between angiotensin 1-7/Mas receptor and Angiotensin II/AT_1 receptor signaling pathways. J. Biol. Chem. 288: 15520-15531.
5. Lin, J.J., et al. 2017. Melatonin suppresses neuropathic pain via MT2-dependent and -independent pathways in dorsal root ganglia neurons of mice. Theranostics 7: 2015-2032.
6. Tanaka, H., et al. 2018. The intellectual disability gene PQBP1 rescues Alzheimer's disease pathology. Mol. Psychiatry 23: 2090-2110.
7. Jayasooriya, R.G.P.T., et al. 2020. Glutamine cooperatively upregulates lipopolysaccharide-induced nitric oxide production in BV2 microglial cells through the ERK and Nrf-2/HO-1 signaling pathway. Antioxidants 9: E536.

RESEARCH USE

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