SANTA CRUZ BIOTECHNOLOGY, INC.

ASK 1 siRNA (m): sc-29749

BACKGROUND

Mitogen-activated protein (MAP) kinase cascades are activated by various extracellular stimuli including growth factors. The MEK kinases (also designated MAP kinase kinase kinases, MKKKs, MAP3Ks or MEKKs) phosphorylate and thereby activate the MEKs (also called MAP kinase kinases or MKKs), including ERK, JNK and p38. These activated MEKs in turn phosphorylate and activate the MAP kinases. The MEK kinases include Raf-1, Raf-B, Mos, MEK kinase-1, MEK kinase-2, MEK kinase-3, MEK kinase-4, ASK 1 (MEK kinase-5) and MAP3K6 (MEK kinase-6). MEK kinase-1 has been shown to phosphorylate MEK-1 via a Raf-independent pathway. Evidence suggests that MEK-3 is preferentially activated by MEK kinase-3 and that MEK-4 is activated by both MEK kinase-2 and MEK kinase-3. MEK kinase-4 has been shown to specifically activate the JNK pathway. ASK1 activates both MEK-4 and MEK-3/MEK-6 pathways.

REFERENCES

1. Lange-Carter, C.A., et al. 1993. A divergence in the MAP kinase regulatory network defined by MEK kinase and Raf. Science 260: 315-319.
2. Guan, K.L. 1994. The mitogen activated protein kinase signal transduction pathway: from the cell surface to the nucleus. Cell. Signal. 6: 581-589.
3. Wang, X.S., et al. 1996. Molecular cloning and characterization of a novel protein kinase with a catalytic domain homologous to mitogen-activated protein kinase kinase kinase. J. Biol. Chem. 271: 31607-31611.

CHROMOSOMAL LOCATION

Genetic locus: Map3k5 (mouse) mapping to 10 A3.

PRODUCT

ASK 1 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 ASK 1 shRNA Plasmid (m): sc-29749-SH and ASK 1 shRNA (m) Lentiviral Particles: sc-29749-V as alternate gene silencing products.

For independent verification of ASK 1 (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-29749A, sc-29749B and sc-29749C.

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

ASK 1 siRNA (m) is recommended for the inhibition of ASK 1 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

ASK 1 (H-2): sc-390275 is recommended as a control antibody for monitoring of ASK 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 ASK 1 gene expression knockdown using RT-PCR Primer: ASK 1 (m)-PR: sc-29749-PR (20 µl, 509 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, F., et al. 2015. ASK1 gene deletion blocks maternal diabetes-induced endoplasmic reticulum stress in the developing embryo by disrupting the unfolded protein response signalosome. Diabetes 64: 973-988.
2. Lin, H.Y., et al. 2016. Cobalt protoporphyrin upregulates cyclooxygenase-2 expression through a heme oxygenase-independent mechanism. Mol. Neurobiol. 53: 4497-508.
3. Yu, Z., et al. 2016. Lys29-linkage of ASK1 by Skp1-Cullin 1-Fbxo21 ubiquitin ligase complex is required for antiviral innate response. Elife 5: e14087.
4. Li, W., et al. 2017. Phosphorylation of LAMP2A by p38 MAPK couples ER stress to chaperone-mediated autophagy. Nat. Commun. 8: 1763.
5. Huo, J., et al. 2020. ASK1 mediates Nur77 expression in T-cell receptor mediated thymocyte apoptosis. Cells 9: 585.
6. Nakamura, K., et al. 2020. Hepatic CEACAM1 expression indicates donor liver quality and prevents early transplantation injury. J. Clin. Invest. 130: 2689-2704.
7. Wu, Y., et al. 2020. The reciprocal causation of the ASK1-JNK1/2 pathway and endoplasmic reticulum stress in diabetes-induced cognitive decline. Front. Cell Dev. Biol. 8: 602.
8. Wu, Y., et al. 2021. Corrigendum: the reciprocal causation of the ASK1-JNK1/2 pathway and endoplasmic reticulum stress in diabetes-induced cognitive decline. Front. Cell Dev. Biol. 9: 639486.

RESEARCH USE

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