SANTA CRUZ BIOTECHNOLOGY, INC.

MKP-7 siRNA (m): sc-61053

BACKGROUND

Mitogen-activated protein (MAP) kinases are a large class of proteins involved in signal transduction pathways that are activated by a range of stimuli and mediate a number of physiological and pathological changes in the cell. Dual specificity phosphatases (DUSPs) are a subclass of the protein tyrosine phosphatase (PTP) gene superfamily, which are selective for dephosphorylating critical phosphothreonine and phosphotyrosine residues within MAP kinases. DUSP gene expression is induced by a host of growth factors and/or cellular stresses, thereby negatively regulating MAP kinase superfamily members including MAPK/ERK, SAPK/JNK and p38. MKP-7 binds to and inactivates p38 MAPK isoforms α and β, and JNK/SAPK, but not ERK. ERK phosphorylates MKP-7 on Ser 446, thereby stabilizing the protein and blocking JNK activation. MKP-7 is predominantly localized in the cytoplasm, but becomes exclusively nuclear following leptomycin B treatment.

REFERENCES

1. Keyse, S.M. 1995. An emerging family of dual specificity MAP kinase phosphatases. Biochim. Biophys. Acta 1265: 152-160.
2. Sun, H. 1998. Functional studies of dual-specificity phosphatases. Methods Mol. Biol. 84: 307-318.
3. Tanoue, T., et al. 2001. A Novel MAPK phosphatase MKP-7 acts preferentially on JNK/SAPK and p38 α and β MAPKs. J. Biol. Chem. 276: 26629-26639.
4. Masuda, K., et al. 2001. MKP-7, a novel mitogen-activated protein kinase phosphatase, functions as a shuttle protein. J. Biol. Chem. 276: 39002-39011.
5. Hoornaert, I., et al. 2003. MAPK phosphatase DUSP16/MKP-7, a candidate tumor suppressor for chromosome region 12p12-13, reduces BCR-ABL-induced transformation. Oncogene 22: 7728-7736.
6. Masuda, K., et al. 2003. Activation of ERK induces phosphorylation of MAPK phosphatase-7, a JNK specific phosphatase, at Ser 446. J. Biol. Chem. 278: 32448-32456.
7. Katagiri, C., et al. 2005. Phosphorylation of Ser 446 determines stability of MKP-7. J. Biol. Chem. 280: 14716-14722.

CHROMOSOMAL LOCATION

Genetic locus: Dusp16 (mouse) mapping to 6 G1.

PRODUCT

MKP-7 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 MKP-7 shRNA Plasmid (m): sc-61053-SH and MKP-7 shRNA (m) Lentiviral Particles: sc-61053-V as alternate gene silencing products.

For independent verification of MKP-7 (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-61053A, sc-61053B and sc-61053C.

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

MKP-7 siRNA (m) is recommended for the inhibition of MKP-7 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MKP-7 gene expression knockdown using RT-PCR Primer: MKP-7 (m)-PR: sc-61053-PR (20 µl, 473 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

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.