SANTA CRUZ BIOTECHNOLOGY, INC.

MKP-2 siRNA (m): sc-38999

BACKGROUND

MKP-2 (MAP kinase phosphatase 2, Dual specificity protein phosphatase 4 (DUSP4)) is a phoshpatase involved in the complex MAPKKK cascade. MKP-2 belongs to the protein-tyrosine phosphatase family (Non-receptor class dual specificity subfamily) and contains one rhodanese domain and one tyrosine-protein phosphatase domain. A dual specificity protein phosphatase, MKP-2 has a stringent substrate specificity for MAPKs. It acts to regulate mitogenic signal transduction by dephosphorylating both Thr and Tyr residues on MAP kinases ERK 1 and ERK 2. Transcription factor E2F-1, which is responsible for mediating apoptosis and suppressing tumorigenesis, acts as a transcriptional regulator of MKP-2. E2F-1 is physically associated with the MKP-2 promoter and can transactivate the promoter of the MKP-2 gene. Specifically, E2F-1 binds to a perfect palindromic motif in the MKP-2 promoter. MKP-2 is an essential cell death mediator in the E2F-1 pathway and may lead to the development of new strategies for cancer treatment.

REFERENCES

1. Shen, W.H., et al. 2006. Mitogen-activated protein kinase phosphatase 2: a novel transcription target of p53 in apoptosis. Cancer Res. 66: 6033-6039.
2. Zhou, B., et al. 2006. Mapping ERK2-MKP3 binding interfaces by hydrogen/deuterium exchange mass spectrometry. J. Biol. Chem. 281: 38834-38844.
3. Tresini, M., et al. 2007. Modulation of replicative senescence of diploid human cells by nuclear ERK signaling. J. Biol. Chem. 282: 4136-4151.
4. Wang, H., et al. 2007. HoxA10 activates transcription of the gene encoding mitogen-activated protein kinase phosphatase 2 (MKP-2) in myeloid cells. J. Biol. Chem. 282: 16164-16176.

CHROMOSOMAL LOCATION

Genetic locus: Dusp4 (mouse) mapping to 8 A4.

PRODUCT

MKP-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 MKP-2 shRNA Plasmid (m): sc-38999-SH and MKP-2 shRNA (m) Lentiviral Particles: sc-38999-V as alternate gene silencing products.

For independent verification of MKP-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-38999A, sc-38999B and sc-38999C.

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-2 siRNA (m) is recommended for the inhibition of MKP-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

MKP-2 (F-10): sc-17821 is recommended as a control antibody for monitoring of MKP-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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MKP-2 gene expression knockdown using RT-PCR Primer: MKP-2 (m)-PR: sc-38999-PR (20 µl, 588 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Valledor, A.F., et al. 2008. IFN-γ-mediated inhibition of MAPK phosphatase expression results in prolonged MAPK activity in response to M-CSF and inhibition of proliferation. Blood 112: 3274-3282.

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.