SANTA CRUZ BIOTECHNOLOGY, INC.

DUSP18 siRNA (m): sc-77199

BACKGROUND

Dual specificity phosphatases (DSPs) are a subclass of the protein tyrosine phosphatase (PTP) gene superfamily, which are selective for dephosphorylating critical phosphothreonine and phosphotyrosine residues within MAP kinases. DSP 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. DUSP18 (dual specificity protein phosphatase 18), also known as low molecular weight dual specificity phosphatase 20, is a 188 amino acid enzyme that functions optimally at a pH of 6.0 and at a temperature of 55 degrees celsius. With highest expression in testis, brain, ovary and liver, DUSP18 is inhibited by iodoarectic acid and is activated by manganese ions. Along with having preferential enzymatic activity against phosphorylated tyrosine residues over threonine residues, DUSP18 also dephosphorylates p-nitrophenyl phosphate (pNPP) *in vitro*.

REFERENCES

1. Aoki, N., et al. 2001. A growing family of dual specificity phosphatases with low molecular masses. J. Biochem. 130: 133-140.
2. Hood, K.L., et al. 2002. Identification and characterization of two novel low-molecular-weight dual specificity phosphatases. Biochem. Biophys. Res. Commun. 298: 545-551.
3. Wu, Q., et al. 2003. Molecular cloning and characterization of a novel dual-specificity phosphatase18 gene from human fetal brain. Biochim. Biophys. Acta 1625: 296-304.
4. Jeong, D.G., et al. 2006. Structure of human DSP18, a member of the dual-specificity protein tyrosine phosphatase family. Acta Crystallogr. D Biol. Crystallogr. 62: 582-588.
5. Wu, Q., et al. 2006. Dual specificity phosphotase 18, interacting with SAPK, dephosphorylates SAPK and inhibits SAPK/JNK signal pathway *in vivo*. Front. Biosci. 11: 2714-2724.
6. Salojin, K., et al. 2007. Regulation of innate immunity by MAPK dual-specificity phosphatases: knockout models reveal new tricks of old genes. J. Leukoc. Biol. 81: 860-869.

CHROMOSOMAL LOCATION

Genetic locus: Dusp18 (mouse) mapping to 11 A1.

PRODUCT

DUSP18 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 DUSP18 shRNA Plasmid (m): sc-77199-SH and DUSP18 shRNA (m) Lentiviral Particles: sc-77199-V as alternate gene silencing products.

For independent verification of DUSP18 (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-77199A, sc-77199B and sc-77199C.

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

DUSP18 siRNA (m) is recommended for the inhibition of DUSP18 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

DUSP18 (E-2): sc-376923 is recommended as a control antibody for monitoring of DUSP18 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 DUSP18 gene expression knockdown using RT-PCR Primer: DUSP18 (m)-PR: sc-77199-PR (20 µl). 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.