

MARK1 siRNA (h): sc-75749

BACKGROUND

The microtubule matrix within a cell plays a central role in intracellular transport, cell shape during differentiation and chromosome partitioning during mitosis. During these processes, microtubules transition rapidly between stable and dynamic states. MAP/microtubule affinity-regulating kinase 1 (MARK1) is a 795 amino acid protein belonging to the CaMK Ser/Thr protein kinase family. MARK1 is thought to play a role in the stability of the microtubule matrix of the cytoskeleton. MARK1 is activated by phosphorylation of Thr 215 by LKB1 in complex with STRAD and MO25. Localized to the cytoskeleton, MARK1 contains one kinase-associated (KA1) domain, one protein kinase domain and one UBA domain. Expressed as three isoforms produced by alternative splicing, MARK1 is found with highest levels in brain, skeletal muscle and heart.

REFERENCES

1. Drewes, G., et al. 1995. Microtubule-associated protein/microtubule affinity-regulating kinase (p110mark). A novel protein kinase that regulates Tau-microtubule interactions and dynamic instability by phosphorylation at the Alzheimer-specific site Serine 262. *J. Biol. Chem.* 270: 7679-7688.
2. Drewes, G., et al. 1997. MARK, a novel family of protein kinases that phosphorylate microtubule-associated proteins and trigger microtubule disruption. *Cell* 89: 297-308.
3. Schneider, A., et al. 1999. Phosphorylation that detaches Tau protein from microtubules (Ser 262, Ser 214) also protects it against aggregation into Alzheimer paired helical filaments. *Biochemistry* 38: 3549-3558.
4. Timm, T., et al. 2003. MARKK, a Ste20-like kinase, activates the polarity-inducing kinase MARK/PAR-1. *EMBO J.* 22: 5090-5101.
5. Lizcano, J.M., et al. 2004. LKB1 is a master kinase that activates 13 kinases of the AMPK subfamily, including MARK/PAR-1. *EMBO J.* 23: 833-843.
6. Trinczek, B., et al. 2004. MARK4 is a novel microtubule-associated proteins/microtubule affinity-regulating kinase that binds to the cellular microtubule network and to centrosomes. *J. Biol. Chem.* 279: 5915-5923.

CHROMOSOMAL LOCATION

Genetic locus: MARK1 (human) mapping to 1q41.

PRODUCT

MARK1 siRNA (h) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MARK1 shRNA Plasmid (h): sc-75749-SH and MARK1 shRNA (h) Lentiviral Particles: sc-75749-V as alternate gene silencing products.

For independent verification of MARK1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-75749A, sc-75749B and sc-75749C.

RESEARCH USE

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

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MARK1 siRNA (h) is recommended for the inhibition of MARK1 expression in human 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 μ M in 66 μ l. 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 MARK1 gene expression knockdown using RT-PCR Primer: MARK1 (h)-PR: sc-75749-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.