

CCM3 siRNA (h): sc-62084

BACKGROUND

Programmed cell death (apoptosis) of nonessential cells is necessary for embryogenesis, metamorphosis, tissue turnover and proper development and function of the immune system. CCM3, also known as Pdc10, is a member of the family of programmed cell death proteins that regulate apoptotic pathways. CCM3 is an anti-apoptotic protein that is essential for proper vascular development and maturation. Through direct interaction with and positive regulation of MST4 in the ERK pathway, CCM3 promotes proper cell growth and differentiation. Defects in the gene encoding CCM3 may be related to cerebral cavernous malformations 3 (CCM3), a disease characterized by vascular anomalies found in the central nervous system that can cause stroke, seizures and focal hemorrhages.

REFERENCES

1. Bergametti, F., et al. 2005. Mutations within the programmed cell death 10 gene cause cerebral cavernous malformations. *Am. J. Hum. Genet.* 76: 42-51.
2. Guclu, B., et al. 2005. Mutations in apoptosis-related gene, PDCD10, cause cerebral cavernous malformation 3. *Neurosurgery* 57: 1008-1013.
3. Verlaan, D.J., et al. 2005. CCM3 mutations are uncommon in cerebral cavernous malformations. *Neurology* 65: 1982-1983.
4. Liquori, C.L., et al. 2006. Low frequency of PDCD10 mutations in a panel of CCM3 probands: potential for a fourth CCM locus. *Hum. Mutat.* 27: 118.
5. Petit, N., et al. 2006. Patterns of expression of the three cerebral cavernous malformation (CCM) genes during embryonic and postnatal brain development. *Gene Expr. Patterns* 6: 495-503.

CHROMOSOMAL LOCATION

Genetic locus: PDCD10 (human) mapping to 3q26.1.

PRODUCT

CCM3 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 CCM3 shRNA Plasmid (h): sc-62084-SH and CCM3 shRNA (h) Lentiviral Particles: sc-62084-V as alternate gene silencing products.

For independent verification of CCM3 (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-62084A, sc-62084B and sc-62084C.

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

CCM3 siRNA (h) is recommended for the inhibition of CCM3 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.

GENE EXPRESSION MONITORING

CCM3 (C-8): sc-365586 is recommended as a control antibody for monitoring of CCM3 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 CCM3 gene expression knockdown using RT-PCR Primer: CCM3 (h)-PR: sc-62084-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lauenborg, B., et al. 2010. Programmed cell death-10 enhances proliferation and protects malignant T cells from apoptosis. *APMIS* 118: 719-728.
2. Wang, K., et al. 2021. ATP1F1 maintains normal mitochondrial structure which is impaired by CCM3 deficiency in endothelial cells. *Cell Biosci.* 11: 11.
3. Qin, L., et al. 2021. CCM3 loss-induced lymphatic defect is mediated by the augmented VEGFR3-ERK1/2 signaling. *Arterioscler. Thromb. Vasc. Biol.* 41: 2943-2960.

RESEARCH USE

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