

Cofilin 1 siRNA (h): sc-35078

BACKGROUND

Cofilin is ubiquitously expressed in eukaryotic cells where it binds to Actin, thereby regulating the rapid cycling of Actin assembly and disassembly, essential for cellular viability. Cofilin is a low molecular weight protein that binds to filamentous F-Actin by bridging two longitudinally-associated Actin subunits, changing the F-Actin filament twist. This process is allowed by the dephosphorylation of Cofilin Ser 3 by factors like opsonized zymosan. LIM kinase 1 (LIMK-1), a serine kinase, phosphorylates Cofilin and renders it unable to bind and depolymerize F-Actin.

REFERENCES

- Moriyama, K., et al. 1996. Phosphorylation of Ser 3 of Cofilin regulates its essential function on Actin. *Genes Cells* 1: 73-86.
- Yahara, I., et al. 1996. A role of Cofilin/destrin in reorganization of Actin cytoskeleton in response to stresses and cell stimuli. *Cell Struct. Funct.* 21: 421-424.
- McGough, A., et al. 1997. Cofilin changes the twist of F-Actin: implications for Actin filament dynamics and cellular function. *J. Cell Biol.* 138: 771-781.
- Lappalainen, P., et al. 1997. Cofilin promotes rapid Actin filament turnover *in vivo*. *Nature* 388: 78-82.
- Iida, K., et al. 1999. Cooperation of two Actin-binding proteins, Cofilin and Aip1, in *Saccharomyces cerevisiae*. *Genes Cells* 4: 21-32.

CHROMOSOMAL LOCATION

Genetic locus: CFL1 (human) mapping to 11q13.1.

PRODUCT

Cofilin 1 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 Cofilin 1 shRNA Plasmid (h): sc-35078-SH and Cofilin 1 shRNA (h) Lentiviral Particles: sc-35078-V as alternate gene silencing products.

For independent verification of Cofilin 1 (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-35078A, sc-35078B and sc-35078C.

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

Cofilin 1 siRNA (h) is recommended for the inhibition of Cofilin 1 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

Cofilin 1 (5): sc-53934 is recommended as a control antibody for monitoring of Cofilin 1 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 Cofilin 1 gene expression knockdown using RT-PCR Primer: Cofilin 1 (h)-PR: sc-35078-PR (20 μ l, 591 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Lu, H., et al. 2018. Curcumin suppresses the motility of breast cancer cells by inhibiting LIM kinase 1 to downregulate cofilin 1 phosphorylation. *Int. J. Oncol.* 53: 2695-2704.
- Virtanen, S.S., et al. 2018. Alendronate-induced disruption of Actin cytoskeleton and inhibition of migration/invasion are associated with cofilin downregulation in PC-3 prostate cancer cells. *Oncotarget* 9: 32593-32608.
- Jalal, S., et al. 2019. Actin cytoskeleton self-organization in single epithelial cells and fibroblasts under isotropic confinement. *J. Cell Sci.* 132: jcs220780.
- Daryabari, S.S., et al. 2020. Overexpression of CFL1 in gastric cancer and the effects of its silencing by siRNA with a nanoparticle delivery system in the gastric cancer cell line. *J. Cell. Physiol.* 235: 6660-6672.

RESEARCH USE

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