



# Dia 1 siRNA (m): sc-35191

## BACKGROUND

Dia 1, also known as DIAPH1 (diaphanous homolog 1) or DRF1, a mammalian homolog of the *Drosophila* diaphanous gene, belongs to a family of formin homology (FH) proteins which are characterized by having tandemly aligned FH1 (formin homology 1) and FH2 (formin homology 2) domains in their carboxy terminal regions. Dia 1 contains a DAD (diaphanous autoregulatory) domain, which is involved in the elongation of Actin filaments, and a GBD/FH3 (Rho GTPase-binding/formin homology 3) domain, which interacts with the DAD domain via autoinhibitory interactions to regulate the activation of Dia 1. Dia 1 is required for the assembly of F-Actin structures, and regulates the polymerization and depolymerization of Actin filaments. Localizing to the cell membrane, Dia 1 is expressed in a wide range of tissues, including brain, heart, lung and kidney. Defects to the gene encoding Dia 1 have been linked to deafness autosomal dominant type 1 (DFNA1), a disorder characterized by sensorineural hearing loss.

## REFERENCES

1. Lynch, E.D., et al. 1997. Nonsyndromic deafness DFNA1 associated with mutation of a human homolog of the *Drosophila* gene diaphanous. *Science* 278: 1315-1318.
2. Bione, S., et al. 1998. A human homologue of the *Drosophila melanogaster* diaphanous gene is disrupted in a patient with premature ovarian failure: evidence for conserved function in oogenesis and implications for human sterility. *Am. J. Hum. Genet.* 62: 533-541.
3. Alberts, A.S., et al. 1998. Analysis of RhoA-binding proteins reveals an interaction domain conserved in heterotrimeric G protein  $\beta$  subunits and the yeast response regulator protein Skn7. *J. Biol. Chem.* 273: 8616-8622.

## CHROMOSOMAL LOCATION

Genetic locus: Diap1 (mouse) mapping to 18 B3.

## PRODUCT

Dia 1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Dia 1 shRNA Plasmid (m): sc-35191-SH and Dia 1 shRNA (m) Lentiviral Particles: sc-35191-V as alternate gene silencing products.

For independent verification of Dia 1 (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-35191A, sc-35191B and sc-35191C.

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

## APPLICATIONS

Dia 1 siRNA (m) is recommended for the inhibition of Dia 1 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  $\mu$ M in 66  $\mu$ 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

Dia 1 (E-4): sc-373807 is recommended as a control antibody for monitoring of Dia 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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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 $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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 Dia 1 gene expression knockdown using RT-PCR Primer: Dia 1 (m)-PR: sc-35191-PR (20  $\mu$ l, 461 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Zhang, Y., et al. 2015. Formin mDia1, a downstream molecule of FMNL1, regulates Profilin1 for Actin assembly and spindle organization during mouse oocyte meiosis. *Biochim. Biophys. Acta* 1853: 317-327.
2. Nejedly, M., et al. 2016. Profilin connects Actin assembly with microtubule dynamics. *Mol. Biol. Cell* 27: 2381-2393.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.