SANTA CRUZ BIOTECHNOLOGY, INC.

# DCAMKL1 siRNA (h): sc-45618

## BACKGROUND

Lissencephaly (smooth brain) is an abnormality of brain development characterized by incomplete neuronal migration and a smooth cerebral surface, manifesting as severe mental retardation. Genetic analysis has identified two proteins that are mutated in some cases of lissencephaly, designated lissencephaly-1 protein (LIS1) and doublecortin. LIS1 displays sequence homology to β-subunits of heterotrimeric G proteins, and doublecortin contains a consensus Abl phosphorylation site. In addition, the DCAMKL1 (doublecortin-like and CAM kinase-like 1) protein shows homology to doublecortin. All three proteins are highly expressed in developing brain and may function together to regulate microtubules involved in neuronal migration. The DCAMKL1 protein encodes a functional kinase that is capable of phosphorylating myelin basic protein and itself, but its kinase activity does not appear to affect its microtubule polymerization activity.

## REFERENCES


1. Reiner, O., et al. 1993. Isolation of a Miller-Dieker lissencephaly gene containing G protein β subunit-like repeats. Nature 364: 717-721.
2. Garcia-Higuera, I., et al. 1996. Folding of proteins with WD-repeats: comparison of six members of the WD-repeat superfamily to the G protein β subunit. Biochemistry 35: 13985-13994.
3. Albrecht, U., et al. 1996. Platelet-activating factor acetylhydrolase expression and activity suggest a link between neuronal migration and platelet-activating factor. Dev. Biol. 180: 579-593.
4. Gleeson, J.G., et al. 1998. Doublecortin, a brain-specific gene mutated in human X-linked lissencephaly and double cortex syndrome, encodes a putative signaling protein. Cell 92: 63-72.


## CHROMOSOMAL LOCATION

Genetic locus: DCLK1 (human) mapping to 13q13.3.

## PRODUCT

DCAMKL1 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 µM solution once resuspended using protocol below. Suit-able for 50-100 transfections. Also see DCAMKL1 shRNA Plasmid (h): sc-45618-SH and DCAMKL1 shRNA (h) Lentiviral Particles: sc-45618-V as alternate gene silencing products.

For independent verification of DCAMKL1 (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-45618A, sc-45618B and sc-45618C.

## 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

DCAMKL1 siRNA (h) is recommended for the inhibition of DCAMKL1 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 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

DCAMKL1 (D-3): sc-514684 is recommended as a control antibody for monitoring of DCAMKL1 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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DCAMKL1 gene expression knockdown using RT-PCR Primer: DCAMKL1 (h)-PR: sc-45618-PR (20 µl, 332 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS


1. Weygant, N., et al. 2016. Survival of patients with gastrointestinal cancers can be predicted by a surrogate microRNA signature for cancer stem-like cells marked by DCLK1 kinase. Cancer Res. 76: 4090-4099.
2. Wang, W., et al. 2016. miR-613 inhibits the growth and invasiveness of human hepatocellular carcinoma via targeting DCLK1. Biochem. Biophys. Res. Commun. 473: 987-992.
3. Chandrakesan, P., et al. 2017. DCLK1, a tumor stem cell marker, regulates pro-survival signaling and self-renewal of intestinal tumor cells. Mol. Cancer 16: 30.
4. Ge, Y., et al. 2018. Alternative splice variants of DCLK1 mark cancer stem cells, promote self-renewal and drug-resistance, and can be targeted to inhibit tumorigenesis in kidney cancer. Int. J. Cancer 143: 1162-1175.
5. Chandrakesan, P., et al. 2020. DCLK1-isoform2 alternative splice variant promotes pancreatic tumor immunosuppressive M2-macrophage polarization. Mol. Cancer Ther. 19: 1539-1549.
6. Panneerselvam, J., et al. 2020. DCLK1 regulates tumor stemness and cisplatin resistance in non-small cell lung cancer via ABCD-member-4. Mol. Ther. Oncolytics 18: 24-36.


## RESEARCH USE

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