SANTA CRUZ BIOTECHNOLOGY, INC.

DYNLL1 siRNA (m): sc-36229

BACKGROUND

Dyneins are multisubunit, high molecular weight ATPases that interact with microtubules to generate force by converting the chemical energy of ATP into the mechanical energy of movement. Cytoplasmic or axonemal Dynein heavy, intermediate, light and light-intermediate chains are all components of minus end-directed motors; the complex transports cellular cargos towards the central region of the cell. The highly conserved DYNLL proteins were originally identified as light chains for microtubule-based motor protein Dynein. In mammals there are two closely related isoforms expressed, DYNLL1 and DYNLL2 which share 93% sequence identity at the protein level. DYNLL1 (Dynein light chain 1) also designated, DLC8 or PIN (protein inhibitor of neuronal nitric oxide synthase) has been identified as a protein that interacts with NOS1 resulting in NOS1 inhibition. Dimerization is required for NOS1 activity and DYNLL1 has been shown to destabilize the NOS1 dimer. Nitric oxide may be involved in several processes such as apoptosis, synaptogenesis and neuronal development; thus DYNLL1 is implicated in these processes as well. DYNLL1 is a ubiquitously expressed protein that exhibits high expression in testis and moderate expression in brain. DYNLL2 (Dynein light chain 2) is subject to a unique alternative splicing event which is implicated in Myosin Va binding specificity.

REFERENCES

1. Dick, T., et al. 1996. Cytoplasmic Dynein (ddlc1) mutations cause morphogenetic defects and apoptotic cell death in *Drosophila melanogaster*. Mol. Cell. Biol. 16: 1966-1977.
2. Jaffrey, S.R. and Snyder, S.H. 1996. PIN: an associated protein inhibitor of neuronal nitric oxide synthase. Science 274: 774-777.
3. Fuhrmann, J.C., et al. 2002. Gephyrin interacts with Dynein light chains 1 and 2, components of motor protein complexes. J. Neurosci. 22: 5393-5402.
4. Asai, D.J. and Wilkes, D.E. 2004. The Dynein heavy chain family. J. Eukaryot. Microbiol. 51: 23-29.
5. Mallik, R., et al. 2004. Cyto-plasmic Dynein functions as a gear in response to load. Nature 427: 649-652.
6. Lee, W.L., et al. 2005. The offloading model for dynein function: differential function of motor subunits. J. Cell Biol. 168: 201-207.

CHROMOSOMAL LOCATION

Genetic locus: Dynll1 (mouse) mapping to 5 F.

PRODUCT

DYNLL1 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see DYNLL1 shRNA Plasmid (m): sc-36229-SH and DYNLL1 shRNA (m) Lentiviral Particles: sc-36229-V as alternate gene silencing products.

For independent verification of DYNLL1 (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-36229A, sc-36229B and sc-36229C.

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

DYNLL1 siRNA (m) is recommended for the inhibition of DYNLL1 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 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

DYNLL1 (4): sc-136287 is recommended as a control antibody for monitoring of DYNLL1 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 DYNLL1 gene expression knockdown using RT-PCR Primer: DYNLL1 (m)-PR: sc-36229-PR (20 µl, 586 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Sun, H., et al. 2021. Dysregulated dynein-mediated trafficking of nephrin causes INF2-related podocytopathy. J. Am. Soc. Nephrol. 32: 307-322.
2. Sun, H., et al. 2023. Dynein-mediated trafficking: a new mechanism of diabetic podocytopathy. Kidney360 4: 162-176.

RESEARCH USE

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

PROTOCOLS

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