SANTA CRUZ BIOTECHNOLOGY, INC.

# DNAH11 siRNA (h): sc-89758

## 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. Axonemal Dynein motors contain one to three non-identical heavy chains and cause a sliding of microtubules in the axonemes of cilia and flagella in a mechanism necessary for cilia to beat and propel the cell. DNAH11 (Axonemal dynein heavy chain isotype 11) is a 4,523 amino acid microtubule-dependent motor ATPase that is involved in respiratory cilia movement. Mutations in the gene encoding DNAH11 have been linked to Kartagener syndrome, which is characterized by male sterility.

## REFERENCES


1. Chapelin, C., Duriez, B., Magnino, F., Goossens, M., Escudier, E. and Amselem, S. 1997. Isolation of several human axonemal dynein heavy chain genes: genomic structure of the catalytic site, phylogenetic analysis and chromosomal assignment. FEBS Lett. 412: 325-330.
2. Kastury, K., Taylor, W.E., Gutierrez, M., Ramirez, L., Coucke, P.J., Van Hauwe, P., Van Camp, G. and Bhasin, S. 1997. Chromosomal mapping of two members of the human dynein gene family to chromosome regions 7p15 and 11q13 near the deafness loci DFNA 5 and DFNA 11. Genomics 44: 362-364.
3. Bartoloni, L., Blouin, J.L., Pan, Y., Gehrig, C., Maiti, A.K., Scamuffa, N., Rossier, C., Jorissen, M., Armengot, M., Meeks, M., Mitchison, H.M., Chung, E.M., Delozier-Blanchet, C.D., Craigen, W.J. and Antonarakis, S.E. 2002. Mutations in the DNAH11 (axonemal heavy chain dynein type 11) gene cause one form of situs inversus totalis and most likely primary ciliary dyskinesia. Proc. Natl. Acad. Sci. USA 99: 10282-10286.
4. Varadi, A., Johnson-Cadwell, L.I., Cirulli, V., Yoon, Y., Allan, V.J. and Rutter, G.A. 2004. Cytoplasmic dynein regulates the subcellular distribution of mitochondria by controlling the recruitment of the fission factor dynamin-related protein-1. J. Cell Sci. 117: 4389-4400.
5. Schwabe, G.C., Hoffmann, K., Loges, N.T., Birker, D., Rossier, C., de Santi, M.M., Olbrich, H., Fliegauf, M., Failly, M., Liebers, U., Collura, M., Gaedicke, G., Mundlos, S., Wahn, U., Blouin, J.L., Niggemann, B., Omran, H., Antonarakis, S.E. and Bartoloni, L. 2008. Primary ciliary dyskinesia associated with normal axoneme ultrastructure is caused by DNAH11 mutations. Hum. Mutat. 29: 289-298.
6. Zuccarello, D., Ferlin, A., Cazzadore, C., Pepe, A., Garolla, A., Moretti, A., Cordeschi, G., Francavilla, S. and Foresta, C. 2008. Mutations in dynein genes in patients affected by isolated non-syndromic asthenozoospermia. Hum. Reprod. 23: 1957-1962.
7. Escudier, E., Duquesnoy, P., Papon, J.F. and Amselem, S. 2009. Ciliary defects and genetics of primary ciliary dyskinesia. Paediatr. Respir. Rev. 10: 51-54.
8. Pifferi, M., Michelucci, A., Conidi, M.E., Cangiotti, A.M., Simi, P., Macchia, P. and Boner, A.L. 2010. New DNAH11 mutations in primary ciliary dyskinesia with normal axonemal ultrastructure. Eur. Respir. J. 35: 1413-1416.


## CHROMOSOMAL LOCATION

Genetic locus: DNAH11 (human) mapping to 7p15.3.

## PRODUCT

DNAH11 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. Suitable for 50-100 transfections. Also see DNAH11 shRNA Plasmid (h): sc-89758-SH and DNAH11 shRNA (h) Lentiviral Particles: sc-89758-V as alternate gene silencing products.

For independent verification of DNAH11 (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-89758A, sc-89758B and sc-89758C.

## 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

DNAH11 siRNA (h) is recommended for the inhibition of DNAH11 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DNAH11 gene expression knockdown using RT-PCR Primer: DNAH11 (h)-PR: sc-89758-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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