SANTA CRUZ BIOTECHNOLOGY, INC.

DNAAF3 siRNA (h): sc-97410

BACKGROUND

DNAAF3 (dynein assembly factor 3, axonemal), also known as C19orf51, is a 541 amino acid cytoplasmic protein that belongs to the DNAAF3 family. DNAAF3 is necessary for the assembly of inner and outer dynein arms and plays a role in dynein assembly before it is transport into cilia. Defects in DNAAF3 contribute to ciliary dyskinesia type 2 (CILD2), which is an autosomal recessive disease that causes abnormalities in motile cilia. Defects in motile cilia, such as respiratory cilia, cause chronic inflammation of the respiratory system while other ciliary abnormalities cause reduced fertility in males due to defects in sperm tails. DNAAF3 is alternatively spliced into four isoforms and is encoded by a gene that maps to human chromosome 19q13.42. Chromosome 19 consists of over 63 million bases, houses approximately 1,400 genes and is recognized for having the greatest gene density of the human chromosomes. It is the genetic home for a number of immunoglobulin (Ig) superfamily members, including the killer cell and leukocyte Ig-like receptors, a number of ICAMs, the CEACAM and PSG families, and Fc receptors (FcRs).

REFERENCES

1. Olsen, A., Teglund, S., Nelson, D., Gordon, L., Copeland, A., Georgescu, A., Carrano, A. and Hammarström, S. 1994. Gene organization of the pregnancy-specific glycoprotein region on human chromosome 19: assembly and analysis of a 700-kb cosmid contig spanning the region. Genomics 23: 659-668.
2. Teglund, S., Olsen, A., Khan, W.N., Frängsmyr, L. and Hammarström, S. 1994. The pregnancy-specific glycoprotein (PSG) gene cluster on human chromosome 19: fine structure of the 11 PSG genes and identification of 6 new genes forming a third subgroup within the carcinoembryonic antigen (CEA) family. Genomics 23: 669-684.
3. Wang, L., Lin, S.H., Wu, W.G., Kemp, B.L., Walsh, G.L., Hong, W.K. and Mao, L. 2000. C-CAM1, a candidate tumor suppressor gene, is abnormally expressed in primary lung cancers. Clin. Cancer Res. 6: 2988-2993.
4. Trowsdale, J., Barten, R., Haude, A., Stewart, C.A., Beck, S. and Wilson, M.J. 2001. The genomic context of natural killer receptor extended gene families. Immunol. Rev. 181: 20-38.
5. Le Meur, N., Martin, C., Saugier-Veber, P., Joly, G., Lemoine, F., Moirot, H., Rossi, A., Bachy, B., Cabot, A., Joly, P. and Frebourg, T. 2004. Complete germline deletion of the STK11 gene in a family with Peutz-Jeghers syndrome. Eur. J. Hum. Genet. 12: 415-418.
6. Leeb, T. and Müller, M. 2004. Comparative human-mouse-rat sequence analysis of the ICAM gene cluster on HSA 19p13.2 and a 185-kb porcine region from SSC 2q. Gene 343: 239-244.
7. Barrow, A.D. and Trowsdale, J. 2008. The extended human leukocyte receptor complex: diverse ways of modulating immune responses. Immunol. Rev. 224: 98-123.
8. Mitchison, H.M., Schmidts, M., Loges, N.T., Freshour, J., Dritsoula, A., Hirst, R.A., O'Callaghan, C., Blau, H., Al Dabbagh, M., Olbrich, H., Beales, P.L., Yagi, T., Mussaffi, H., Chung, E.M., Omran, H. and Mitchell, D.R. 2012. Mutations in axonemal dynein assembly factor DNAAF3 cause primary ciliary dyskinesia. Nat. Genet. 44: 381-389, S1-S2.

CHROMOSOMAL LOCATION

Genetic locus: DNAAF3 (human) mapping to 19q13.42.

PRODUCT

DNAAF3 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 DNAAF3 shRNA Plasmid (h): sc-97410-SH and DNAAF3 shRNA (h) Lentiviral Particles: sc-97410-V as alternate gene silencing products.

For independent verification of DNAAF3 (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-97410A, sc-97410B and sc-97410C.

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

DNAAF3 siRNA (h) is recommended for the inhibition of DNAAF3 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 DNAAF3 gene expression knockdown using RT-PCR Primer: DNAAF3 (h)-PR: sc-97410-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.

PROTOCOLS

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