SANTA CRUZ BIOTECHNOLOGY, INC.

nephrocystin-4 siRNA (h): sc-61182

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The Power to Question

BACKGROUND

The nephrocystin proteins comprise a family of five enzymes that commonly interact with p130Cas, proline-rich tyrosine kinases, calmodulin, and Tensin, indicating that these proteins may participate in a common signaling pathway. nephrocystin-4 is a 1,250-amino acid protein that interacts with signaling molecules involved in cell adhesion and organization of the Actin cytoskeleton, such as Pyk2, Tensin, and Filamins. nephrocystin-4 colocalizes with PKD-2 in the transition zones of ciliated sensory endings of dendrites, and, together, they play an important role in facilitating ciliary sensory signal transduction. Mutations in the nephrocystin-4 gene contribute to the disease nephronophthisis, an autosomal-recessive cystic kidney disease. Clinical features of familial juvenile nephronophthisis include anemia, polyuria, polydipsia, isosthenuria and death.

REFERENCES

1. Mollet, G., et al. 2002. The gene mutated in juvenile nephronophthisis type 4 encodes a novel protein that interacts with nephrocystin. Nat. Genet. 32: 300-305.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607215: World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Olbrich, H., et al. 2003. Mutations in a novel gene, NPHP3, cause adolescent nephronophthisis, tapeto-retinal degeneration and hepatic fibrosis. Nat. Genet. 34: 455-459.
4. Hoefele, J., et al. 2004. Clinical and histological presentation of 3 siblings with mutations in the NPHP4 gene. Am. J. Kidney Dis. 43: 358-364.
5. Jauregui, A.R. and Barr, M.M. 2005. Functional characterization of the *C. elegans* nephrocystins NPHP-1 and NPHP-4 and their role in cilia and male sensory behaviors. Exp. Cell Res. 305: 333-342.
6. Mollet, G., et al. 2005. Characterization of the nephrocystin/nephrocystin-4 complex and subcellular localization of nephrocystin-4 to primary cilia and centrosomes. Hum. Mol. Genet. 14: 645-656.
7. Roepman, R., et al. 2005. Interaction of nephrocystin-4 and RPGRIP1 is disrupted by nephronophthisis or Leber congenital amaurosis-associated mutations. Proc. Natl. Acad. Sci. USA 102: 18520-18525.
8. Winkelbauer, M.E., et al. 2005. The *C. elegans* homologs of nephrocystin-1 and nephrocystin-4 are cilia transition zone proteins involved in chemosensory perception. J. Cell Sci. 118: 5575-5587.
9. Wolf, M.T., et al. 2005. Expression and phenotype analysis of the nephrocystin-1 and nephrocystin-4 homologs in *Caenorhabditis elegans*. J. Am. Soc. Nephrol. 16: 676-687.

CHROMOSOMAL LOCATION

Genetic locus: NPHP4 (human) mapping to 1p36.31.

PROTOCOLS

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

PRODUCT

nephrocystin-4 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 nephrocystin-4 shRNA Plasmid (h): sc-61182-SH and nephrocystin-4 shRNA (h) Lentiviral Particles: sc-61182-V as alternate gene silencing products.

For independent verification of nephrocystin-4 (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-61182A, sc-61182B and sc-61182C.

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

nephrocystin-4 siRNA (h) is recommended for the inhibition of nephrocystin-4 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 nephrocystin-4 gene expression knockdown using RT-PCR Primer: nephrocystin-4 (h)-PR: sc-61182-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.