SANTA CRUZ BIOTECHNOLOGY, INC.

PANK2 siRNA (h): sc-76042

BACKGROUND

PANK2 (pantothenate kinase 2), also known as HSS, HARP, PKAN or NBIA1, is a ubiquitously expressed 570 amino acid member of the pantothenate kinase family of enzymes that are involved in the synthesis of coenzyme A (CoA). Localized to the cytoplasm and mitochondria, PANK2 is thought to be the chief regulator of CoA biosynthesis, catalyzing the first of five steps in the biosynthetic pathway. Regulated by feedback inhibition from synthesized CoA, PANK2 catalyzes the ATP-dependent conversion of pantothenate to 4'-phosphopantothenate, thus initiating the first committed step in CoA biosynthesis. Defects in the gene encoding PANK2 are the cause of pantothenate kinase-associated neurodegeneration (PKAN) and hypoprebetalipoproteinemia, acanthocytosis, retinitis pigmentosa and pallidal degeneration (HARP). PKAN and HARP are rare disorders characterized by extrapyramidal dysfunction and progressive dementia, both of which are caused by an accumulation of iron in the brain. PANK2 is expressed as three isoforms due to alternative splicing events.

REFERENCES

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2. Ching, K.H., et al. 2002. HARP syndrome is allelic with pantothenate kinase-associated neurodegeneration. Neurology 58: 1673-1674.
3. Hörtnagel, K., et al. 2003. An isoform of hPANK2, deficient in pantothenate kinase-associated neurodegeneration, localizes to mitochondria. Hum. Mol. Genet. 12: 321-327.
4. Hartig, M.B., et al. 2006. Genotypic and phenotypic spectrum of PANK2 mutations in patients with neurodegeneration with brain iron accumulation. Ann. Neurol. 59: 248-256.
5. Kazek, B., et al. 2007. A novel PANK2 gene mutation: clinical and molecular characteristics of patients short communication. J. Child Neurol. 22: 1256-1259.
6. Leonardi, R., et al. 2007. Localization and regulation of mouse pantothenate kinase 2. FEBS Lett. 581: 4639-4644.
7. Leonardi, R., et al. 2007. Activation of human mitochondrial pantothenate kinase 2 by palmitoylcarnitine. Proc. Natl. Acad. Sci. USA 104: 1494-1499.

CHROMOSOMAL LOCATION

Genetic locus: PANK2 (human) mapping to 20p13.

PRODUCT

PANK2 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 PANK2 shRNA Plasmid (h): sc-76042-SH and PANK2 shRNA (h) Lentiviral Particles: sc-76042-V as alternate gene silencing products.

For independent verification of PANK2 (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-76042A, sc-76042B and sc-76042C.

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

PANK2 siRNA (h) is recommended for the inhibition of PANK2 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

PANK1/2 (C-4): sc-390595 is recommended as a control antibody for monitoring of PANK2 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PANK2 gene expression knockdown using RT-PCR Primer: PANK2 (h)-PR: sc-76042-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.