SANTA CRUZ BIOTECHNOLOGY, INC.

karyopherin α3 siRNA (m): sc-146340

BACKGROUND

Protein transport across the nucleus is a selective, multi-step process involving several cytoplasmic factors that mediate protein passage through the nuclear pore complex (NPC). Cytoplasmic proteins that contain nuclear localization signals (NLSs) must be recognized as import substrates, dock at the nuclear pore complex and translocate across the nuclear envelope in an ATP-dependent fashion. Karyopherin α3, also known as KPNA3 or QIP2, is a 521 amino acid protein that localizes to both the nucleus and the cytoplasm and contains one IBB domain and 10 ARM repeats. Expressed ubiquitously with highest expression in heart and skeletal muscle, karyopherin α3 binds to NLS-containing proteins, as well as to HIV-1 proteins, and directs their import into the nucleus. Additionally, karyopherin α3 functions as an adaptor protein for karyopherin β1 and helps regulate karyopherin β1-mediated docking of target substrates to the NPC complex. The gene encoding karyopherin α3 maps to human chromosome 13 and may be involved in the pathogenesis of schizophrenia.

REFERENCES

1. Moore, M.S., et al. 1992. The two steps of nuclear import, targeting to the nuclear envelope and translocation through the nuclear pore, require different cytosolic factors. Cell 69: 939-950.
2. Gallay, P., et al. 1996. Role of the karyopherin pathway in human immunodeficiency virus type 1 nuclear import. J. Virol. 70: 1027-1032.
3. Takeda, S., et al. 1997. Isolation and mapping of karyopherin α3 (KPNA3), a human gene that is highly homologous to genes encoding *Xenopus* importin, yeast SRP1 and human RCH1. Cytogenet. Cell Genet. 76: 87-93.
4. Köhler, M., et al. 1997. Cloning of two novel human importin-α subunits and analysis of the expression pattern of the importin-α protein family. FEBS Lett. 417: 104-108.
5. Köhler, M., et al. 1999. Evidence for distinct substrate specificities of importin-α family members in nuclear protein import. Mol. Cell. Biol. 19: 7782-7791.
6. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 601892: World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: Kpna3 (mouse) mapping to 14 D1.

PRODUCT

karyopherin α3 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 karyopherin α3 shRNA Plasmid (m): sc-146340-SH and karyopherin α3 shRNA (m) Lentiviral Particles: sc-146340-V as alternate gene silencing products.

For independent verification of karyopherin α3 (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-146340A, sc-146340B and sc-146340C.

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

karyopherin α3 siRNA (m) is recommended for the inhibition of karyopherin α3 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

karyopherin α3 (B-1): sc-514101 is recommended as a control antibody for monitoring of karyopherin α3 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 karyopherin α3 gene expression knockdown using RT-PCR Primer: karyopherin α3 (m)-PR: sc-146340-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.