SANTA CRUZ BIOTECHNOLOGY, INC.

NPAS1 siRNA (h): sc-61221

BACKGROUND

Members of the bHLH-PAS family are transcription factors that contain a basic helix-loop-helix (bHLH) DNA-recognition motif which is located N-terminal to a PAS domain comprised of two imperfect direct repeats. Human NPAS1 is a deduced 590-amino acid protein which shares 86% sequence homology with mouse Npas1. In order for NPAS1 to bind DNA efficiently, it must form a dimer with another bHLH protein. NPAS1 interacts with ARNT (aryl hydrocarbon receptor nuclear translocator), and shows predominant expression in brain tissue. NPAS1 is also implicated in the control of regulatory pathways relevant to schizophrenia and to psychotic illness, and may play a role in late central nervous system development by modulating EPO expression in response to cellular oxygen levels. The NPAS1 gene maps to human chromosome 19q13.32.

REFERENCES

1. Hogenesch, J.B., et al. 1997. Characterization of a subset of the basic-helix-loop-helix-PAS superfamily that interacts with components of the dioxin signaling pathway. J. Biol. Chem. 272: 8581-8593.
2. Zhou, Y.D., et al. 1997. Molecular characterization of two mammalian bHLH-PAS domain proteins selectively expressed in the central nervous system. Proc. Natl. Acad. Sci. USA 94: 713-718.
3. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 126110. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Erbel-Sieler, C., et al. 2004. Behavioral and regulatory abnormalities in mice deficient in the NPAS1 and NPAS3 transcription factors. Proc. Natl. Acad. Sci. USA 101: 13648-13653.
5. Ohsawa, S., et al. 2005. Novel function of neuronal PAS domain protein 1 in erythropoietin expression in neuronal cells. J. Neurosci. Res. 79: 451-458.
6. Pieper, A.A., et al. 2005. The neuronal PAS domain protein 3 transcription factor controls FGF-mediated adult hippocampal neurogenesis in mice. Proc. Natl. Acad. Sci. USA 102: 14052-14057.

CHROMOSOMAL LOCATION

Genetic locus: NPAS1 (human) mapping to 19q13.32.

PRODUCT

NPAS1 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 NPAS1 shRNA Plasmid (h): sc-61221-SH and NPAS1 shRNA (h) Lentiviral Particles: sc-61221-V as alternate gene silencing products.

For independent verification of NPAS1 (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-61221A, sc-61221B and sc-61221C.

RESEARCH USE

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

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

NPAS1 siRNA (h) is recommended for the inhibition of NPAS1 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

NPAS1 (F-4): sc-376083 is recommended as a control antibody for monitoring of NPAS1 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 NPAS1 gene expression knockdown using RT-PCR Primer: NPAS1 (h)-PR: sc-61221-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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