SANTA CRUZ BIOTECHNOLOGY, INC.

POU3F4 siRNA (h): sc-76201

BACKGROUND

The Brn family of transcription factors are found in a highly restricted subset of neurons and are critical to the early embryonic development of the central nervous system. POU3F4 (POU domain, class 3, transcription factor 4), also known as OTF9, DFN3, DFNX2, BRAIN-4 or Brn-4, is a 361 amino acid class III POU domain protein that belongs to the Brn family. Localized to the nucleus, POU3F4 contains one POU-specific domain and one homeobox DNA-binding domain through which it is thought to function as a brain-specific transcription factor that effects neuronal development. Defects in the gene encoding POU3F4 are associated with X-linked deafness type 3 (DFN3), a disorder characterized by both progressive sensorineural deafness and conductive hearing loss caused by stapes gushers (large vestibular aqueducts).

REFERENCES

1. Malik, K.F., Jaffe, H., Brady, J. and Young, W.S. 1997. The class III POU factor Brn-4 interacts with other class III POU factors and the heterogeneous nuclear ribonucleoprotein U. Brain Res. Mol. Brain Res. 45: 99-107.
2. de Kok, Y.J., Cremers, C.W., Ropers, H.H. and Cremers, F.P. 1997. The molecular basis of X-linked deafness type 3 (DFN3) in two sporadic cases: identification of a somatic mosaicism for a POU3F4 missense mutation. Hum. Mutat. 10: 207-211.
3. Phippard, D., Heydemann, A., Lechner, M., Lu, L., Lee, D., Kyin, T. and Crenshaw, E.B. 1998. Changes in the subcellular localization of the Brn4 gene product precede mesenchymal remodeling of the otic capsule. Hear. Res. 120: 77-85.
4. Hagiwara, H., Tamagawa, Y., Kitamura, K. and Kodera, K. 1998. A new mutation in the POU3F4 gene in a Japanese family with X-linked mixed deafness (DFN3). Laryngoscope 108: 1544-1547.
5. Shimazaki, T., Arsenijevic, Y., Ryan, A.K., Rosenfeld, M.G. and Weiss, S. 1999. A role for the POU-III transcription factor Brn-4 in the regulation of striatal neuron precursor differentiation. EMBO J. 18: 444-456.
6. Xia, A.P., Kikuchi, T., Minowa, O., Katori, Y., Oshima, T., Noda, T. and Ikeda, K. 2002. Late-onset hearing loss in a mouse model of DFN3 non-syndromic deafness: morphologic and immunohistochemical analyses. Hear. Res. 166: 150-158.
7. Wang, P., Liu, T., Li, Z., Ma, X. and Jin, T. 2006. Redundant and synergistic effect of Cdx-2 and Brn-4 on regulating proglucagon gene expression. Endocrinology 147: 1950-1958.
8. Hildebrand, M.S., de Silva, M.G., Tan, T.Y., Rose, E., Nishimura, C., Tolmachova, T., Hulett, J.M., White, S.M., Silver, J., Bahlo, M., Smith, R.J. and Dahl, H.H. 2007. Molecular characterization of a novel X-linked syndrome involving developmental delay and deafness. Am. J. Med. Genet. A 143A: 2564-2575.
9. Braunstein, E.M., Crenshaw Iii, E.B., Morrow, B.E. and Adams, J.C. 2008. Cooperative function of Tbx1 and Brn4 in the periotic mesenchyme is necessary for cochlea formation. J. Assoc. Res. Otolaryngol. 9: 33-43.

CHROMOSOMAL LOCATION

Genetic locus: POU3F4 (human) mapping to Xq21.1.

PRODUCT

POU3F4 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 POU3F4 shRNA Plasmid (h): sc-76201-SH and POU3F4 shRNA (h) Lentiviral Particles: sc-76201-V as alternate gene silencing products.

For independent verification of POU3F4 (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-76201A, sc-76201B and sc-76201C.

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

POU3F4 siRNA (h) is recommended for the inhibition of POU3F4 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 POU3F4 gene expression knockdown using RT-PCR Primer: POU3F4 (h)-PR: sc-76201-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.