SANTA CRUZ BIOTECHNOLOGY, INC.

FOXE1 siRNA (m): sc-145224

BACKGROUND

Forkhead box protein E1 (FOXE1) is a member of the forkhead/ winged-helix domain transcription factor family. FOXE1, also designated FKHL15 or TTF-2, complexes with TTF-1 and Pax-8 to induce thyroid follicular cell differentiation and thyroid hormone biosynthesis by regulating the expression of the sodium iodide symporter (NIS), thyroid peroxidase (TPO), thyroglobulin (TG) and the thyrotropin receptor (TSHR). FOXE1 encodes a protein that is expressed in several tissues, including thymus, adult brain, lung, liver, heart and pancreas. The chromosomal location of the FOXE1 gene on 9q22.33 suggests that it may be involved in squamous cell epithelioma and hereditary sensory neuropathy type I. Mutations in the FOXE1 gene lead to the development of congenital hypothyroidism, which occurs in approximately one in four thousand newborns and results in complete or partial failure of thyroid gland development. Patients who are homozygous for a missense mutation in the forkhead domain of the FOXE1 gene can also develop thyroid agenesis, cleft palate and choanal atresia. Subsequently, the FOXE1 gene may used as a marker to study these disorders.

REFERENCES

1. Chadwick, B.P., et al. 1997. FKHL15, a new human member of the forkhead gene family located on chromosome 9q22. Genomics 41: 390-396.
2. Clifton-Bligh, R.J., et al. 1998. Mutation of the gene encoding human TTF-2 associated with thyroid agenesis, cleft palate and choanal atresia. Nat. Genet. 19: 399-401.
3. Suzuki, K., et al. 1999. Thyroglobulin regulates follicular function and heterogeneity by suppressing thyroid-specific gene expression. Biochimie 81: 329-340.
4. Miyazaki, A., et al. 1999. Tumor necrosis factor α and interferon-γ suppress both gene expression and deoxyribonucleic acid-binding of TTF-2 in FRTL-5 cells. Endocrinology 140: 4214-4220.
5. Macchia, P.E., et al. 1999. Cloning, chromosomal localization and identification of polymorphisms in the human thyroid transcription factor 2 gene (TITF2). Biochimie 81: 433-440.
6. Damante, G., et al. 2000. A unique combination of transcription factors controls differentiation of thyroid cells. Prog. Nucleic Acid Res. Mol. Biol. 66: 307-356.
7. Shimura, H., et al. 2001. Transcriptional activation of the thyroglobulin promoter directing suicide gene expression by thyroid transcription factor-1 in thyroid cancer cells. Cancer Res. 61: 3640-3666.

CHROMOSOMAL LOCATION

Genetic locus: Foxe1 (mouse) mapping to 4 B1.

PRODUCT

FOXE1 siRNA (m) is a target-specific 19-25 nt siRNA 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 FOXE1 shRNA Plasmid (m): sc-145224-SH and FOXE1 shRNA (m) Lentiviral Particles: sc-145224-V as alternate gene silencing products.

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

FOXE1 siRNA (m) is recommended for the inhibition of FOXE1 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

FOXE1 (D-6): sc-518211 is recommended as a control antibody for monitoring of FOXE1 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 FOXE1 gene expression knockdown using RT-PCR Primer: FOXE1 (m)-PR: sc-145224-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.