SANTA CRUZ BIOTECHNOLOGY, INC.

HNF-3β siRNA (h): sc-35569

BACKGROUND

HNF-1 (α and β), HNF-3 (α, β and γ), HNF-4 (α and γ), and HNF-6 compose, in part, a homoeprotein family designated the hepatocyte nuclear factor family. The various HNF-1 isoforms regulate transcription of genes in the liver as well as in other tissues such as kidney, small intestine and thymus. HNF-3α, HNF-3β and HNF-3γ regulate the transcription of numerous hepatocyte genes in adult liver. HNF-3α and HNF-3β have also been shown to be involved in gastrulation events such as body axis formation. HNF-4α and HNF-4γ have been shown to be important for early embryo development. HNF-4α is expressed in liver, kidney, pancreas, small intestine, testis and colon; HNF-4γ is expressed in each of these tissues except liver. HNF-6 has been shown to bind to the promoter of HNF-3β, which indicates a potential role of HNF-6 in gut endoderm epithelial cell differentiation. Evidence suggests that HNF-6 may also be a transriptional activator for at least 22 other hepatocyte-enriched genes, including cytochrome P450 2C13 and α-1 antitrypsin.

REFERENCES

1. Bach, I., et al. 1993. More potent transcriptional activators or a transdominant inhibitor of the HNF-1 homeoprotein family are generated by alternative RNA processing. EMBO J. 12: 4229-4242.
2. Kaestner, K.H., et al. 1994. The HNF-3 gene family of transcription factors in mice: gene structure, cDNA sequence, and mRNA distribution. Genomics 20: 377-385.

CHROMOSOMAL LOCATION

Genetic locus: FOXA2 (human) mapping to 20p11.21.

PRODUCT

HNF-3β 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 HNF-3β shRNA Plasmid (h): sc-35569-SH and HNF-3β shRNA (h) Lentiviral Particles: sc-35569-V as alternate gene silencing products.

For independent verification of HNF-3β (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-35569A, sc-35569B and sc-35569C.

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

HNF-3β siRNA (h) is recommended for the inhibition of HNF-3β 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

HNF-3β (H-4): sc-374376 is recommended as a control antibody for monitoring of HNF-3β 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor HNF-3β gene expression knockdown using RT-PCR Primer: HNF-3β (h)-PR: sc-35569-PR (20 µl, 419 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Popovic, J., et al. 2010. Tissue-specific forkhead protein FOXA2 up-regulates SOX14 gene expression. Biochim. Biophys. Acta 1799: 411-418.
2. Shavva, V.S., et al. 2016. Insulin-mediated downregulation of apolipoprotein A-I gene in human hepatoma cell line Hep G2: the role of interaction between FOXO1 and LXRβ transcription factors. J. Cell. Biochem. 118: 382-396.
3. Yamamura, N., et al. 2017. Forkhead box protein A2, a pioneer factor for hepatogenesis, is involved in the expression of hepatic phenotype of α-fetoprotein-producing adenocarcinoma. Pathol. Res. Pract. 213: 1082-1088.
4. Milan, M., et al. 2019. FOXA2 controls the *cis*-regulatory networks of pancreatic cancer cells in a differentiation grade-specific manner. EMBO J. 38: e102161.
5. Paranjapye, A., et al. 2020. The FOXA1 transcriptional network coordinates key functions of primary human airway epithelial cells. Am. J. Physiol. Lung Cell. Mol. Physiol. 319: L126-L136.
6. Liu, Y., et al. 2021. FOXA2-interacting FOXP2 prevents epithelial-mesenchymal transition of breast cancer cells by stimulating E-cadherin and PHF2 transcription. Front. Oncol. 11: 605025.
7. Yin, S., et al. 2022. Cross-talk between enhancers, structural elements and activating transcription factors maintains the 3D architecture and expression of the CFTR gene. Genomics 114: 110350.

RESEARCH USE

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