SANTA CRUZ BIOTECHNOLOGY, INC.

XBP-1 siRNA (m): sc-38628

BACKGROUND

The X-box binding protein-1 (XBP-1 or hXBP-1), also designated tax-responsive element-binding protein 5 (TREB5) in mouse and human, or hepatocarcinogenesis-related transcription factor (HTF) in rat, belongs to the basic region/leucine zipper (bZIP) family of transcription factors. XBP-1 was first characterized as a protein that binds to the HLA-DRα promoter in B cells. XBP-1 recognizes the cAMP responsive element (CRE) in enhancers of human T cell leukemia virus and major histocompatibility complex class II genes and activates transcription of these genes. It is expressed at high levels in developing bone and its levels are modulated during osteoblast development, suggesting a role in regulation of expression of osteoblast-specific genes. In addition to binding to CRE sequences, XBP-1 has been shown to bind to TPA response elements (TREs).

CHROMOSOMAL LOCATION

Genetic locus: Xbp1 (mouse) mapping to 11 A1.

PRODUCT

XBP-1 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 XBP-1 shRNA Plasmid (m): sc-38628-SH and XBP-1 shRNA (m) Lentiviral Particles: sc-38628-V as alternate gene silencing products.

For independent verification of XBP-1 (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-38628A, sc-38628B and sc-38628C.

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

XBP-1 siRNA (m) is recommended for the inhibition of XBP-1 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

XBP-1 (F-4): sc-8015 is recommended as a control antibody for monitoring of XBP-1 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 XBP-1 gene expression knockdown using RT-PCR Primer: XBP-1 (m)-PR: sc-38628-PR (20 µl, 552 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hu, F., et al. 2011. ER stress and its regulator X-box-binding protein-1 enhance polyIC-induced innate immune response in dendritic cells. Eur. J. Immunol. 41: 1086-1097.
2. Kim, S., et al. 2015. Endoplasmic reticulum stress-induced IRE1α activation mediates cross-talk of GSK-3β and XBP-1 to regulate inflammatory cytokine production. J. Immunol. 194: 4498-4506.
3. Zhou, B., et al. 2016. Autophagic dysfunction is improved by intermittent administration of osteocalcin in obese mice. Int. J. Obes. 40: 833-843.
4. Kishino, A., et al. 2017. XBP1-FoxO1 interaction regulates ER stress-induced autophagy in auditory cells. Sci. Rep. 7: 4442.
5. Hu, J., et al. 2018. Expression of GPR43 in brown adipogenesis is enhanced by rosiglitazone and controlled by PPARγ/RXR heterodimerization. PPAR Res. 2018: 1051074.
6. Zheng, H., et al. 2018. Leptin promotes allergic airway inflammation through targeting the unfolded protein response pathway. Sci. Rep. 8: 8905.
7. Serrano, R.L., et al. 2019. A vascular smooth muscle cell X-box binding protein 1 and transglutaminase 2 regulatory circuit limits neointimal hyperplasia. PLoS ONE 14: e0212235.
8. Chung, Y.P., et al. 2019. Methylmercury exposure induces Ros/Akt inactivation-triggered endoplasmic reticulum stress-regulated neuronal cell apoptosis. Toxicology 425: 152245.
9. Huang, C.F., et al. 2021. Roles of ERK/Akt signals in mitochondria-dependent and endoplasmic reticulum stress-triggered neuronal cell apoptosis induced by 4-methyl-2,4-bis(4-hydroxyphenyl)pent-1-ene, a major active metabolite of bisphenol A. Toxicology 455: 152764.

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.