SANTA CRUZ BIOTECHNOLOGY, INC.

BACH1 siRNA (h): sc-37064

BACKGROUND

Members of the small Maf family (MafK, MafF, and MafG) are basic region leucine zipper (bZip) proteins that can function as transcriptional activators or repressors. They dimerize with other proteins and bind DNA to either repress or activate transcription depending on the dimer compositions. BACH1 and BACH2, heterodimerization partners of MafK, are members of a novel family of BTB/POZ-basic region leucine zipper (bZip) factors. BACH1 and BACH2 have significant similarity to each other in BTB domain and Cap "n" collar-type bZip domain but are otherwise divergent. BACH1 appears ubiquitous, whereas BACH2 is restricted to monocytes and neuronal cells and is abundantly expressed in the early stages of B cell differentiation.

CHROMOSOMAL LOCATION

Genetic locus: BACH1 (human) mapping to 21q21.3.

PRODUCT

BACH1 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 BACH1 shRNA Plasmid (h): sc-37064-SH and BACH1 shRNA (h) Lentiviral Particles: sc-37064-V as alternate gene silencing products.

For independent verification of BACH1 (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-37064A, sc-37064B and sc-37064C.

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

BACH1 siRNA (h) is recommended for the inhibition of BACH1 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

BACH1 (F-9): sc-271211 is recommended as a control antibody for monitoring of BACH1 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 BACH1 gene expression knockdown using RT-PCR Primer: BACH1 (h)-PR: sc-37064-PR (20 µl, 587 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Palozza, P., et al. 2006. β-carotene and cigarette smoke condensate regulate heme oxygenase-1 and its repressor factor BACH1: relationship with cell growth. Antioxid. Redox Signal. 8: 1069-1080.
2. Miyazaki, T., et al. 2010. Expression of heme oxygenase-1 in human leukemic cells and its regulation by transcriptional repressor BACH1. Cancer Sci. 101: 1409-1416.
3. Han, Q., et al. 2013. Intermittent hypoxia-induced NFκB and HO-1 regulation in human endothelial EA.hy926 cells. Cell Biochem. Biophys. 66: 431-441.
4. Luo, X., et al. 2014. Homocysteine downregulates gene expression of heme oxygenase-1 in hepatocytes. Nutr. Metab. 11: 55.
5. Wang, X.H., 2016. BACH1 induces endothelial cell apoptosis and cell-cycle arrest through Ros generation. Oxid. Med. Cell. Longev. 2016: 6234043.
6. Aletaha, M., et al. 2017. Therapeutic effects of BACH1 siRNA on human breast adenocarcinoma cell line. Biomed. Pharmacother. 88: 34-42.
7. Jiao, Y., et al. 2018. Sorafenib and docosahexaenoic acid act in synergy to suppress cancer cell viability: a role of Heme Oxygenase 1. BMC Cancer 18: 1042.
8. Tsuneyoshi, T., et al. 2019. S-1-propenylcysteine augments BACH1 degradation and heme oxygenase 1 expression in a nitric oxide-dependent manner in endothelial cells. Nitric Oxide 84: 22-29.
9. Zhang, H., et al. 2019. Silencing BACH1 alters aging-related changes in the expression of Nrf2-regulated genes in primary human bronchial epithelial cells. Arch. Biochem. Biophys. 672: 108074.
10. NandyMazumdar, M., et al. 2021. BACH1, the master regulator of oxidative stress, has a dual effect on CFTR expression. Biochem. J. 478: 3741-3756.
11. Kaur, P., et al. 2021. Activated heme synthesis regulates glycolysis and oxidative metabolism in breast and ovarian cancer cells. PLoS ONE 16: e0260400.

RESEARCH USE

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