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Nrf2 siRNA (r): sc-156128

BACKGROUND

The NF-E2 DNA binding protein is composed of two subunits, p45 and MafK. It regulates expression of globin genes in developing erythroid cells through interaction with Maf recognition elements (Mares). A family of NF-E2-related proteins, which are collectively known as the Cap "n" collar (CNC) family and include Nrf1 (also designated TCF11), Nrf2 and Nrf3, are bZIP transcription factors that heterodimerize with Maf proteins to bind Maf sequences. The Nrf proteins also bind the antioxidant response element (ARE) and are implicated in the regulation of detoxification enzymes and the oxidative stress response. They do so by heterodimerizing with Jun family members (c-Jun, Jun B and Jun D) to activate gene expression, specifically the detoxifying enzyme NQO1. Nrf2 is widely expressed and is thought to translocate to the nucleus after treatment with xenobiotics and antioxidants, which stimulate its release from its repressor protein, Keap1.

REFERENCES

- Chan, J.Y., et al. 1995. Chromosomal localization of the human NF-E2 family of bZIP transcription factors by fluorescence *in situ* hybridization. *Hum. Genet.* 95: 265-269.
- Chan, K., et al. 1996. Nrf2, a member of the NFE2 family of transcription factors, is not essential for murine erythropoiesis, growth, and development. *Proc. Natl. Acad. Sci. USA* 93: 13943-13948.

CHROMOSOMAL LOCATION

Genetic locus: Nfe2l2 (rat) mapping to 3q23.

PRODUCT

Nrf2 siRNA (r) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Nrf2 shRNA Plasmid (r): sc-156128-SH and Nrf2 shRNA (r) Lentiviral Particles: sc-156128-V as alternate gene silencing products.

For independent verification of Nrf2 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-156128A, sc-156128B and sc-156128C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Nrf2 siRNA (r) is recommended for the inhibition of Nrf2 expression in rat 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 μ M in 66 μ l. 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 Nrf2 gene expression knockdown using RT-PCR Primer: Nrf2 (r)-PR: sc-156128-PR (20 μ l, 471 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Zhang, B., et al. 2013. Anthocyanins from Chinese bayberry extract activate transcription factor Nrf2 in β cells and negatively regulate oxidative stress-induced autophagy. *J. Agric. Food Chem.* 61: 8765-8772.
- Cao, S., et al. 2017. *Lycium barbarum* polysaccharide protects against neurotoxicity via the Nrf2-HO-1 pathway. *Exp. Ther. Med.* 14: 4919-4927.
- Liao, H.H., et al. 2017. Myricetin possesses potential protective effects on diabetic cardiomyopathy through inhibiting κ B α /NF κ B and enhancing Nrf2/HO-1. *Oxid. Med. Cell. Longev.* 2017: 8370593.
- Gao, J., et al. 2018. Trilobatin protects against oxidative injury in neuronal PC12 cells through regulating mitochondrial Ros homeostasis mediated by AMPK/Nrf2/Sirt3 signaling pathway. *Front. Mol. Neurosci.* 11: 267.
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- Wu, Q.Q., et al. 2019. The protective effect of high mobility group protein HMGA2 in pressure overload-induced cardiac remodeling. *J. Mol. Cell. Cardiol.* 128: 160-178.
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- Khaleel, S.A., et al. 2019. Contrast media (meglumine diatrizoate) aggravates renal inflammation, oxidative DNA damage and apoptosis in diabetic rats which is restored by sulforaphane through Nrf2/HO-1 reactivation. *Chem. Biol. Interact.* 309: 108689.

RESEARCH USE

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