

ERR α siRNA (h): sc-44706

BACKGROUND

Estrogen related receptor α (ERR α) is a nuclear receptor in the superfamily of ligand-regulated transcription factors and is a member of the NR3B orphan nuclear receptor subgroup (consisting of α , β and γ). ERR α plays a role in modulating the estrogen signaling pathway. In addition, the expression of ERR α has been shown to increase during fasting and cold exposure. ERR α may be important for regulating mitochondrial biogenesis and oxidative metabolism by acting directly on genes necessary for mitochondrial function. Mice lacking ERR α are unable to maintain their body temperature in the cold. ERR α may also be involved in the maintenance and formation of cartilage. This information could be useful in finding therapeutic agents for a variety of diseases affecting the joints.

CHROMOSOMAL LOCATION

Genetic locus: ESRRA (human) mapping to 11q13.1.

PRODUCT

ERR α 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ERR α shRNA Plasmid (h): sc-44706-SH and ERR α shRNA (h) Lentiviral Particles: sc-44706-V as alternate gene silencing products.

For independent verification of ERR α (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-44706A, sc-44706B and sc-44706C.

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

ERR α siRNA (h) is recommended for the inhibition of ERR α 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 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.

GENE EXPRESSION MONITORING

ERR α (2ERR2): sc-65718 is recommended as a control antibody for monitoring of ERR α 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 ERR α gene expression knockdown using RT-PCR Primer: ERR α (h)-PR: sc-44706-PR (20 μ l, 557 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, K., et al. 2011. Baicalin increases VEGF expression and angiogenesis by activating the ERR α /PGC-1 α pathway. *Cardiovasc. Res.* 89: 426-435.
2. Zhou, X., et al. 2014. Resveratrol regulates mitochondrial reactive oxygen species homeostasis through Sirt3 signaling pathway in human vascular endothelial cells. *Cell Death Dis.* 5: e1576.
3. Choi, Y.K., et al. 2016. Carbon monoxide stimulates astrocytic mitochondrial biogenesis via L-type Ca²⁺ channel-mediated PGC-1 α /ERR α activation. *Biochem. Biophys. Res. Commun.* 479: 297-304.
4. Han, L., et al. 2016. MicroRNA-497 downregulation contributes to cell proliferation, migration, and invasion of estrogen receptor alpha negative breast cancer by targeting estrogen-related receptor α . *Tumour Biol.* 37: 13205-13214.
5. Song, C., et al. 2017. Melatonin-mediated upregulation of Sirt3 attenuates sodium fluoride-induced hepatotoxicity by activating the MT1-PI3K/AKT-PGC-1 α signaling pathway. *Free Radic. Biol. Med.* 112: 616-630.
6. Wang, C.W., et al. 2017. Antimetastatic effects of cordycepin mediated by the inhibition of mitochondrial activity and estrogen-related receptor α in human ovarian carcinoma cells. *Oncotarget* 8: 3049-3058.
7. Choi, Y.K., et al. 2018. Heme oxygenase metabolites improve astrocytic mitochondrial function via a Ca²⁺-dependent HIF-1 α /ERR α circuit. *PLoS ONE* 13: e0202039.
8. Zeng, X., et al. 2019. Dihydromyricetin ameliorates nonalcoholic fatty liver disease by improving mitochondrial respiratory capacity and redox homeostasis through modulation of SIRT3 signaling. *Antioxid. Redox Signal.* 30: 163-183.
9. Chen, C.Y., et al. 2021. Inhibition of estrogen-related receptor α blocks liver steatosis and steatohepatitis and attenuates triglyceride biosynthesis. *Am. J. Pathol.* 191: 1240-1254.
10. Kim, M., et al. 2021. Korean red ginseng improves astrocytic mitochondrial function by upregulating HO-1-mediated AMPK α -PGC-1 α -ERR α circuit after traumatic brain injury. *Int. J. Mol. Sci.* 22: 13081.

RESEARCH USE

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