SANTA CRUZ BIOTECHNOLOGY, INC.

# HIF-1α siRNA (h): sc-35561

## BACKGROUND

Cell growth and viability is compromised by oxygen deprivation (hypoxia). Hypoxia-inducible factors, including HIF-1α, Arnt 1 (also designated HIF-1β), EPAS-1 (also designated HIF-2α) and HIF-3α, induce glycolysis, erythropoiesis and angiogenesis in order to restore oxygen homeostasis. Hypoxia-inducible factors are members of the Per-Arnt-Sim (PAS) domain transcription factor family. In response to hypoxia, HIF-1α is upregulated and forms a heterodimer with Arnt 1 to form the HIF-1 complex. The HIF-1 complex recognizes and binds to the hypoxia responsive element (HRE) of hypoxia-inducible genes, thereby activating transcription. Hypoxia-inducible expression of some genes, such as Glut-1, p53, p21 or Bcl-2, is HIF-1α dependent, whereas expression of others, such as p27, GADD 153 or HO-1, is HIF-1α independent. EPAS-1 and HIF-3α have also been shown to form heterodimeric complexes with Arnt 1 in response to hypoxia.

## CHROMOSOMAL LOCATION

Genetic locus: HIF1A (human) mapping to 14q23.2.

## PRODUCT

HIF-1α siRNA (h) is a target-specific 19-25 nt siRNA 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 HIF-1α shRNA Plasmid (h): sc-35561-SH and HIF-1α shRNA (h) Lentiviral Particles: sc-35561-V as alternate gene silencing products.

## 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

HIF-1α siRNA (h) is recommended for the inhibition of HIF-1α 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

HIF-1α (28b): sc-13515 is recommended as a control antibody for monitoring of HIF-1α 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 HIF-1α gene expression knockdown using RT-PCR Primer: HIF-1α (h)-PR: sc-35561-PR (20 µl, 315 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS


1. Ji, Z., et al. 2006. Induction of hypoxia-inducible factor-1α overexpression by cobalt chloride enhances cellular resistance to photodynamic therapy. Cancer Lett. 244: 182-189.
2. Doublier, S., et al. 2012. HIF-1 activation induces doxorubicin resistance in MCF7 3-D spheroids via P-glycoprotein expression: a potential model of the chemo-resistance of invasive micropapillary carcinoma of the breast. BMC Cancer 12: 4.
3. An, Y., et al. 2013. Hypoxia-inducible factor-1α dependent pathways mediate the renoprotective role of acetazolamide against renal ischemia-reperfusion injury. Cell. Physiol. Biochem. 32: 1151-1166.
4. Xu, H., et al. 2014. MiR-338-3p inhibits hepatocarcinoma cells and sensitizes these cells to sorafenib by targeting hypoxia-induced factor 1α. PLoS ONE 9: e115565.
5. Lv, Y., et al. 2015. Hypoxia-inducible factor-1α induces multidrug resistance protein in colon cancer. Onco Targets Ther. 8: 1941-1948.
6. Cui, Y., et al. 2016. Stat3 regulates hypoxia-induced epithelial mesenchymal transition in oesophageal squamous cell cancer. Oncol. Rep. 36: 108-116.
7. Zhu, G., et al. 2017. Hypoxia promotes migration/invasion and glycolysis in head and neck squamous cell carcinoma via an HIF-1α-MTDH loop. Oncol. Rep. 38: 2893-2900.
8. Tang, H., et al. 2018. Endothelial HIF-2α contributes to severe pulmonary hypertension due to endothelial-to-mesenchymal transition. Am. J. Physiol. Lung Cell. Mol. Physiol. 314: L256-L275.
9. Wang, X., et al. 2019. Macrophage-specific hypoxia-inducible factor-1α contributes to impaired autophagic flux in nonalcoholic steatohepatitis. Hepatology 69: 545-563.
10. Asare-Werehene, M., et al. 2020. The exosome-mediated autocrine and paracrine actions of plasma gelsolin in ovarian cancer chemoresistance. Oncogene 39: 1600-1616.
11. Liu, Y., et al. 2021. NDUFA4L2 in smooth muscle promotes vascular remodeling in hypoxic pulmonary arterial hypertension. J. Cell. Mol. Med. 25: 1221-1237.


## RESEARCH USE

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