

IDH2 siRNA (h): sc-62487

BACKGROUND

IDH2 (isocitrate dehydrogenase 2 (NADP⁺), mitochondrial), also designated NADP⁺-specific ICDH; isocitrate dehydrogenase, mitochondrial; and oxalosuccinate decarboxylase, is a 452 amino acid enzyme encoded by the human gene IDH2. IDH2 belongs to the isocitrate and isopropylmalate dehydrogenases family and contains two nucleotide binding regions. IDH2 is involved in the reduction of NADP⁺ to NADPH and maintains the supply of glutathione (GSH) in mitochondria. It is believed to play a role in intermediary metabolism and energy production. IDH2 also tightly associates with the pyruvate dehydrogenase complex. IDH2 is found in the mitochondrion as a homodimer and can bind one magnesium or manganese ion per subunit.

REFERENCES

- Grzeschik, K.H. 1976. Assignment of a gene for human mitochondrial isocitrate dehydrogenase (ICD-M, EC 1.1.1.41) to chromosome 15. *Hum. Genet.* 34: 23-28.
- Champion, M.J., et al. 1978. Assignment of cytoplasmic α -mannosidase (MANA) and confirmation of mitochondrial isocitrate dehydrogenase (IDHM) to the q11 leads to qter region of chromosome 15 in man. *Cytogenet. Cell Genet.* 22: 498-502.
- Luo, H., et al. 1996. Expression of human mitochondrial NADP-dependent isocitrate dehydrogenase during lymphocyte activation. *J. Cell. Biochem.* 60: 495-507.
- Huh, T.L., et al 1996. Assignment of the human mitochondrial NAD⁺-specific isocitrate dehydrogenase α subunit (IDH3A) gene to 15q25.1-15q25.2 by *in situ* hybridization. *Genomics* 32: 295-296.

CHROMOSOMAL LOCATION

Genetic locus: IDH2 (human) mapping to 15q26.1.

PRODUCT

IDH2 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 IDH2 shRNA Plasmid (h): sc-62487-SH and IDH2 shRNA (h) Lentiviral Particles: sc-62487-V as alternate gene silencing products.

For independent verification of IDH2 (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-62487A, sc-62487B and sc-62487C.

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

IDH2 siRNA (h) is recommended for the inhibition of IDH2 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

IDH2 (B-6): sc-374476 is recommended as a control antibody for monitoring of IDH2 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor IDH2 gene expression knockdown using RT-PCR Primer: IDH2 (h)-PR: sc-62487-PR (20 μ l, 595 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Vohwinkel, C.U., et al. 2011. Elevated CO₂ levels cause mitochondrial dysfunction and impair cell proliferation. *J. Biol. Chem.* 286: 37067-37076.
- Shao, C., et al. 2020. Cytosolic ME1 integrated with mitochondrial IDH2 supports tumor growth and metastasis. *Redox Biol.* 36: 101685.
- Chen, X., et al. 2022. Differential metabolic requirement governed by transcription factor c-Maf dictates innate γ T17 effector functionality in mice and humans. *Sci. Adv.* 8: eabm9120.

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.