SANTA CRUZ BIOTECHNOLOGY, INC.

IMPDH2 siRNA (h): sc-105573

BACKGROUND

IMPDH2 (IMP (inosine monophosphate) dehydrogenase 2), also known as IMPD2, is a 514 amino acid protein that contains two CBS domains and is involved in purine metabolism. Existing as a homotetramer, IMPDH2 uses potassium as a cofactor to catalyze the rate-limiting step in the synthesis of guanine nucleotides, thus maintaining cellular guanine deoxy- and ribonucleotide pools needed for DNA and RNA synthesis, as well as playing a crucial role in the regulation of cell growth. Due to its ability to mediate cell growth, when overexpressed IMPDH2 may be involved in malignant transformation. The gene encoding IMPDH2 maps to human chromosome 3, which houses over 1,100 genes, including a chemokine receptor (CKR) gene cluster and a variety of human cancer-related gene loci.

REFERENCES

1. Collart, F.R. and Huberman, E. 1988. Cloning and sequence analysis of the human and Chinese hamster inosine-5'-monophosphate dehydrogenase cDNAs. J. Biol. Chem. 263: 15769-15772.
2. Natsumeda, Y., et al. 1990. Two distinct cDNAs for human IMP dehydrogenase. J. Biol. Chem. 265: 5292-5295.
3. Glesne, D., et al. 1993. Chromosomal localization and structure of the human type II IMP dehydrogenase gene (IMPDH2). Genomics 16: 274-277.
4. Carr, S.F., et al. 1993. Characterization of human type I and type II IMP dehydrogenases. J. Biol. Chem. 268: 27286-27290.
5. Hager, P.W., et al. 1995. Recombinant human inosine monophosphate dehydrogenase type I and type II proteins. Purification and characterization of inhibitor binding. Biochem. Pharmacol. 49: 1323-1329.
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7. Colby, T.D., et al. 1999. Crystal structure of human type II inosine monophosphate dehydrogenase: implications for ligand binding and drug design. Proc. Natl. Acad. Sci. USA 96: 3531-3536.
8. Peñuelas, S., et al. 2005. Modulation of IMPDH2, survivin, topoisomerase I and vimentin increases sensitivity to methotrexate in HT29 human colon cancer cells. FEBS J. 272: 696-710.

CHROMOSOMAL LOCATION

Genetic locus: IMPDH2 (human) mapping to 3p21.31.

PRODUCT

IMPDH2 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 IMPDH2 shRNA Plasmid (h): sc-105573-SH and IMPDH2 shRNA (h) Lentiviral Particles: sc-105573-V as alternate gene silencing products.

For independent verification of IMPDH2 (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-105573A, sc-105573B and sc-105573C.

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

IMPDH2 siRNA (h) is recommended for the inhibition of IMPDH2 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

IMPDH (F-6): sc-166551 is recommended as a control antibody for monitoring of IMPDH2 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 IMPDH2 gene expression knockdown using RT-PCR Primer: IMPDH2 (h)-PR: sc-105573-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. Zhang, Q., et al. 2014. The role of IMP dehydrogenase 2 in Inauhzin-induced ribosomal stress. Elife 3: e03077.

RESEARCH USE

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