SANTA CRUZ BIOTECHNOLOGY, INC.

ICMT siRNA (h): sc-88830

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The Power to Question

BACKGROUND

ICMT (isoprenylcysteine carboxylmethyltransferase), also known as PCCMT, HSTE14 or PPMT, is a 284 amino acid multi-pass membrane protein that localizes to the endoplasmic reticulum and belongs to the isoprenylcysteine O-methyltransferase family. Expressed ubiquitously, with highest expression in brain tissue, ICMT uses divalent cations (such as zinc) to catalyze the post-translational methylation of isoprenylated C-terminal cysteine residues. Specifically, ICMT functions as the third of three enzymes that modify isoprenylated C-terminal cysteine residues on target proteins, thereby targeting those proteins to the cell membrane. Inhibition of ICMT effects Ras function and causes endothelial apoptosis, an event that may lead to a decrease in oncogenic transformation. Multiple isoforms of ICMT exist due to alternative splicing.

REFERENCES

1. Dai, Q., et al. 1998. Mammalian prenylcysteine carboxyl methyltransferase is in the endoplasmic reticulum. J. Biol. Chem. 273: 15030-15034.
2. Desrosiers, R.R., et al. 1999. The carboxyl methyltransferase modifying G proteins is a metalloenzyme. Biochem. Biophys. Res. Commun. 261: 790-797.
3. Choy, E., et al. 1999. Endomembrane trafficking of Ras: the CAAX motif targets proteins to the ER and Golgi. Cell 98: 69-80.
4. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 605851. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
5. Kramer, K., et al. 2003. Isoprenylcysteine carboxyl methyltransferase activity modulates endothelial cell apoptosis. Mol. Biol. Cell 14: 848-857.
6. Winter-Vann, A.M., et al. 2003. Targeting Ras signaling through inhibition of carboxyl methylation: an unexpected property of methotrexate. Proc. Natl. Acad. Sci. USA 100: 6529-6534.
7. Bergo, M.O., et al. 2004. Inactivation of ICMT inhibits transformation by oncogenic K-Ras and B-Raf. J. Clin. Invest. 113: 539-550.

CHROMOSOMAL LOCATION

Genetic locus: ICMT (human) mapping to 1p36.31.

PRODUCT

ICMT 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 ICMT shRNA Plasmid (h): sc-88830-SH and ICMT shRNA (h) Lentiviral Particles: sc-88830-V as alternate gene silencing products.

For independent verification of ICMT (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-88830A, sc-88830B and sc-88830C.

RESEARCH USE

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

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

ICMT siRNA (h) is recommended for the inhibition of ICMT 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ICMT gene expression knockdown using RT-PCR Primer: ICMT (h)-PR: sc-88830-PR (20 µl, 570 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kim, J.H., et al. 2013. Adenosine dialdehyde suppresses MMP-9-mediated invasion of cancer cells by blocking the Ras/Raf-1/ERK/AP-1 signaling pathway. Biochem. Pharmacol. 86: 1285-1300.
2. Pan, Q., et al. 2018. Inhibition of isoprenylcysteine carboxylmethyltransferase sensitizes common chemotherapies in cervical cancer via Ras-dependent pathway. Biomed. Pharmacother. 99: 169-175.
3. Marin-Ramos, N.I., et al. 2019. A potent isoprenylcysteine carboxylmethyltransferase (ICMT) inhibitor improves survival in Ras-driven acute myeloid leukemia. J. Med. Chem. 62: 6035-6046.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.