SANTA CRUZ BIOTECHNOLOGY, INC.

Dicer siRNA (h): sc-40489

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The Power to Question

BACKGROUND

The mammalian Dicer is a type III RNase-related protein with orthologs in yeast, *Drosophila* and *Arabidopsis*. Dicer contains an RNA-helicase motif, including a DEXH box in its amino-terminus and an RNase motif in the carboxy-terminus. The gene encoding human Dicer maps to chromosome 14q32.13. Dicer is expressed in brain, heart, liver, lung, pancreas, kidney and placenta and functions in the RNA interference pathway. Dicer cleaves short hairpin RNA precursors of approximately 70 bp into 21-23 bp dsRNAs that selectively target the destruction of homologous RNAs. Dicer localizes to the cytoplasm of mammalian cells. Specifically, it co-localizes with calreticulin in the endoplasmic reticulum. Although the cleavage of RNA by Dicer is ATP-independent, the product release necessary for the rapid turnover of this enzyme may be attributed to ATP. Immunoprecipitation studies indicate Dicer forms a complex with the PIWI domain of eIF2C translation initiation factors.

CHROMOSOMAL LOCATION

Genetic locus: DICER1 (human) mapping to 14q32.13.

PRODUCT

Dicer 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 Dicer shRNA Plasmid (h): sc-40489-SH and Dicer shRNA (h) Lentiviral Particles: sc-40489-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

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

Dicer (F-10): sc-136979 is recommended as a control antibody for monitoring of Dicer 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 Dicer gene expression knockdown using RT-PCR Primer: Dicer (h)-PR: sc-40489-PR (20 µl, 479 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ng, W.L., et al. 2010. Over-expression of miR-100 is responsible for the low-expression of ATM in the human glioma cell line: M059J. DNA Repair 9: 1170-1175.
2. Srikantan, S., et al. 2011. Paradoxical microRNAs: individual gene repressors, global translation enhancers. Cell Cycle 10: 751-759.
3. Abdelmohsen, K., et al. 2012. RNA-binding protein AUF1 represses Dicer expression. Nucleic Acids Res. 40: 11531-11544.
4. Pichiorri, F., et al. 2013. *In vivo* NCL targeting affects breast cancer aggressiveness through miRNA regulation. J. Exp. Med. 210: 951-968.
5. Yao, M., et al. 2014. Dicer mediating the expression of miR-143 and miR-155 regulates hexokinase II associated cellular response to hypoxia. Am. J. Physiol. Lung Cell. Mol. Physiol. 307: L829-L837.
6. Noren Hooten, N., et al. 2016. Metformin-mediated increase in Dicer-1 regulates microRNA expression and cellular senescence. Aging Cell 15: 572-581.
7. Xiao, G., et al. 2017. MiR-129 blocks estrogen induction of NOTCH signaling activity in breast cancer stem-like cells. Oncotarget 8: 103261-103273.
8. Wu, Y.L., et al. 2017. Multiple microRNAs ameliorate hepatocyte steatosis and injury by suppressing FABP1 expression. Cell. Physiol. Biochem. 44: 2243-2255.
9. Aasland, D., et al. 2018. Repair gene O^6-methylguanine-DNA methyltransferase is controlled by SP1 and up-regulated by glucocorticoids, but not by temozolomide and radiation. J. Neurochem. 144: 139-151.
10. Su, X., et al. 2019. RNAase III-type enzyme Dicer regulates mitochondrial fatty acid oxidative metabolism in cardiac mesenchymal stem cells. Int. J. Mol. Sci. 20: 5554.
11. Dang, Y., et al. 2020. Gastric cancer proliferation and invasion is reduced by macrocalyxin C via activation of the miR-212-3p/Sox6 pathway. Cell. Signal. 66: 109430.

RESEARCH USE

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