SANTA CRUZ BIOTECHNOLOGY, INC.

R2 siRNA (h): sc-36338

BACKGROUND

Ribonucleotide reductase is essential for the production and maintenance of the level of deoxyribonucleoside triphosphates (dNTPs) required for DNA synthesis. It is an enzymatic complex consisting of two nonidentical subunits, R1 and R2, which are inactive separately. R2, the smaller subunit, is localized to the cytoplasm. R2 is the limiting factor of the catalytic activity of the ribonucleotide reductase enzymatic complex. R2 expression is strictly correlated to the S-phase of the cell cycle, whereas R1 remains constant throughout all phases of the cell cycle. While R2 seems to be involved solely in the maintenance of dNTPs for DNA replication, a similar protein, p53R2, has been shown to be responsible for the production of dNTPs in response to DNA damage.

CHROMOSOMAL LOCATION

Genetic locus: RRM2 (human) mapping to 2p25.1.

PRODUCT

R2 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 R2 shRNA Plasmid (h): sc-36338-SH and R2 shRNA (h) Lentiviral Particles: sc-36338-V as alternate gene silencing products.

For independent verification of R2 (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-36338A, sc-36338B and sc-36338C.

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

R2 siRNA (h) is recommended for the inhibition of R2 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.

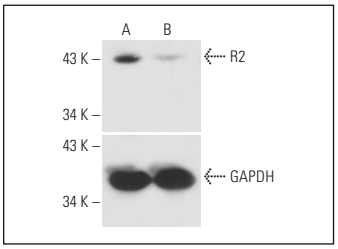
GENE EXPRESSION MONITORING

R2 (A-5): sc-398294 is recommended as a control antibody for monitoring of R2 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 R2 gene expression knockdown using RT-PCR Primer: R2 (h)-PR: sc-36338-PR (20 µl, 597 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



R2 siRNA (h): sc-36338. Western blot analysis of R2 expression in non-transfected control (**A**) and R2 siRNA transfected (**B**) HeLa cells. Blot probed with R2 (E-16): sc-10846. GAPDH (FL-335): sc-25778 used as specificity and loading control.

SELECT PRODUCT CITATIONS

1. Zhang, K., et al. 2009. Overexpression of RRM2 decreases thrombspondin-1 and increases VEGF production in human cancer cells *in vitro* and *in vivo:* implication of RRM2 in angiogenesis. Mol. Cancer 8: 11.
2. Fang, Z., et al. 2015. E2F1 promote the aggressiveness of human colorectal cancer by activating the ribonucleotide reductase small subunit M2. Biochem. Biophys. Res. Commun. 464: 407-415.
3. Liu, X., et al. 2016. Inhibition of hepatitis B virus replication by targeting ribonucleotide reductase M2 protein. Biochem. Pharmacol. 103: 118-128.
4. Zhang, K., et al. 2018. Overexpression of flap endonuclease 1 correlates with enhanced proliferation and poor prognosis of non-small-cell lung cancer. Am. J. Pathol. 188: 242-251.
5. Liu, X., et al. 2019. Silencing RRM2 inhibits multiple myeloma by targeting the Wnt/β-catenin signaling pathway. Mol. Med. Rep. 20: 2159-2166.
6. Zhuang, S., et al. 2020. RRM2 elicits the metastatic potential of breast cancer cells by regulating cell invasion, migration and VEGF expression via the PI3K/Akt signaling. Oncol. Lett. 19: 3349-3355.
7. Chow, Z., et al. 2024. Inhibition of ribonucleotide reductase subunit M2 enhances the radiosensitivity of metastatic pancreatic neuroendocrine tumor. Cancer Lett. 596: 216993.

RESEARCH USE

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