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SANTA CRUZ BIOTECHNOLOGY, INC.

p53 siRNA (r): sc-45917

SANTA CRUZ BIOTECHNOLOGY
The Power to Question

BACKGROUND

p53, a DNA-binding, oligomerization domain- and transcription activation domain-containing tumor suppressor, upregulates growth arrest and apoptosis-related genes in response to stress signals, thereby influencing programmed cell death, cell differentiation, and cell cycle control mechanisms. p53 localizes to the nucleus, yet can be chaperoned to the cytoplasm by the negative regulator, MDM2. MDM2 is an E3 ubiquitin ligase that is upregulated in the presence of active p53, where it poly-ubiquitinates p53 for proteasome targeting. p53 fluctuates between latent and active DNA-binding conformations and is differentially activated through posttranslational modifications, including phosphorylation and acetylation. Mutations in the DNA-binding domain (DBD) of p53, amino acids 110-286, can compromise energetically-favorable association with *cis* elements and are implicated in several human cancers.

CHROMOSOMAL LOCATION

Genetic locus: Tp53 (rat) mapping to 10q24.

PRODUCT

p53 siRNA (r) 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 p53 shRNA Plasmid (r): sc-45917-SH and p53 shRNA (r) Lentiviral Particles: sc-45917-V as alternate gene silencing products.

For independent verification of p53 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-45917A, sc-45917B and sc-45917C.

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

p53 siRNA (r) is recommended for the inhibition of p53 expression in rat 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

p53 (A-1): sc-393031 is recommended as a control antibody for monitoring of p53 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 p53 gene expression knockdown using RT-PCR Primer: p53 (r)-PR: sc-45917-PR (20 µl, 455 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yu, X.Y., et al. 2010. High levels of glucose induce apoptosis in cardiomyocyte via epigenetic regulation of the Insulin-like growth factor receptor. Exp. Cell Res. 316: 2903-2909.
2. Sung, J.Y., et al. 2011. AMPK induces vascular smooth muscle cell senescence via LKB1 dependent pathway. Biochem. Biophys. Res. Commun. 413: 143-148.
3. Singh, S., et al. 2012. Regulation of GAD65 expression by SMAR1 and p53 upon Streptozotocin treatment. BMC Mol. Biol. 13: 28.
4. Wang, H.J., et al. 2012. Dual pathways of p53 mediated glucolipotoxicity-induced apoptosis of rat cardiomyoblast cell: activation of p53 proapoptosis and inhibition of Nrf2-NQO1 antiapoptosis. Metab. Clin. Exp. 61: 496-503.
5. Yu, D., et al. 2013. Induction of neuronal mitophagy in acute spinal cord injury in rats. Neurotox. Res. 24: 512-522.
6. Huang, E.Y., et al. 2014. Amifostine alleviates radiation-induced lethal small bowel damage via promotion of 14-3-3σ-mediated nuclear p53 accumulation. Oncotarget 5: 9756-9769.
7. Xu, T., et al. 2015. Slug mediates nasopharyngeal carcinoma radioresistance via downregulation of PUMA in a p53-dependent and -independent manner. Oncol. Rep. 33: 2631-2638.
8. Chen, M.J., et al. 2015. The effect of androgens on ovarian follicle maturation: dihydrotestosterone suppress FSH-stimulated granulosa cell proliferation by upregulating PPARγ-dependent PTEN expression. Sci. Rep. 5: 18319.
9. Jin, H., et al. 2016. Activation of PPARγ/p53 signaling is required for curcumin to induce hepatic stellate cell senescence. Cell Death Dis. 7: e2189.
10. Wang, L., et al. 2019. p53-dependent induction of ferroptosis is required for artemether to alleviate carbon tetrachloride-induced liver fibrosis and hepatic stellate cell activation. IUBMB Life 71: 45-56.

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.