SANTA CRUZ BIOTECHNOLOGY, INC.

SESN2 siRNA (h): sc-106544

BACKGROUND

SESN2, also known as sestrin 2, HI95, SES2 or SEST2, is a 480 amino acid protein that belongs to the sestrin family of PA26-related proteins. Expressed in a variety of tissues throughout the body, SESN2 is thought to be involved in the regulation of cell growth and survival and may play a role in mediating stress-induced cellular responses. SESN2 expression is upregulated following oxidative stress or DNA damage. This leads to cell toxicity and subsequent apoptosis, implying an essential role for SESN2 in the regulation of cell viability. Conversely, overexpression of SESN2 in breast cancer cells leads to protection from apoptosis, suggesting a possible role for SESN2 in tumor progression. SESN2 is, therefore, a crucial regulator of cell survival whose function varies depending on cellular conditions.

REFERENCES

1. Budanov, A.V., et al. 2002. Identification of a novel stress-responsive gene HI95 involved in regulation of cell viability. Oncogene 21: 6017-6031.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607767. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Peeters, H., et al. 2003. PA26 is a candidate gene for heterotaxia in humans: identification of a novel PA26-related gene family in human and mouse. Hum. Genet. 112: 573-580.

CHROMOSOMAL LOCATION

Genetic locus: SESN2 (human) mapping to 1p35.3.

PRODUCT

SESN2 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 SESN2 shRNA Plasmid (h): sc-106544-SH and SESN2 shRNA (h) Lentiviral Particles: sc-106544-V as alternate gene silencing products.

For independent verification of SESN2 (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-106544A, sc-106544B and sc-106544C.

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

SESN2 siRNA (h) is recommended for the inhibition of SESN2 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

SESN2 (D-4): sc-393195 is recommended as a control antibody for monitoring of SESN2 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 SESN2 gene expression knockdown using RT-PCR Primer: SESN2 (h)-PR: sc-106544-PR (20 µl, 565 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lee, S.O., et al. 2012. The nuclear receptor TR3 regulates mTORC1 signaling in lung cancer cells expressing wild-type p53. Oncogene 31: 3265-3276.
2. Wang, S., et al. 2015. ATF4 gene network mediates cellular response to the anticancer PAD inhibitor YW3-56 in triple-negative breast cancer cells. Mol. Cancer Ther. 14: 877-888.
3. Chai, D., et al. 2015. Insulin increases sestrin 2 content by reducing its degradation through the PI_3K/mTOR signaling pathway. Int. J. Endocrinol. 2015: 505849.
4. Jeong, S., et al. 2019. Docosahexaenoic acid enhances oxaliplatin-induced autophagic cell death via the ER stress/Sesn2 pathway in colorectal cancer. Cancers 11: 982.
5. Jang, S.K., et al. 2021. Inhibition of mTORC1 through ATF4-induced REDD1 and Sestrin2 expression by metformin. BMC Cancer 21: 803.

RESEARCH USE

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