SANTA CRUZ BIOTECHNOLOGY, INC.

PUMA siRNA (h): sc-37153

BACKGROUND

PUMA (Bcl-2 binding component 3, JFY1, PUMA/JFY1) is a mitochondrial pro-apoptotic Bcl-2 homology domain (BH3)-only protein that induces rapid apoptosis through a Bax- and mitochondria-dependent pathway. The PUMA gene encodes four proteins originating from different splice variants of the same transcript: PUMAα, β, γ and δ. Both PUMAα and PUMAβ contain a BH3 domain, while PUMAγ and PUMAδ lack this domain. The BH3 domain is essential for binding of PUMAα and PUMAβ to Bcl-2 or Bcl-x_L. PUMA is an initiator of gamma-radiation apoptosis and glucocorticoid-induced apoptosis in lymphoid cells *in vivo*. Bcl-2 family members generally regulate apoptosis and transmit death signals to mitochondria. Members of this family include both pro- and anti-apoptotic proteins that share homologous sequences known as Bcl-2 homology domains (BH1-4). The BH3 proteins, BID, NOXA, PUMA, NBK, Bim and Bad, are all pro-apoptotic and share sequence homology within the amphipathic α-helical BH3 region.

REFERENCES

1. Yu, J., et al. 2001. PUMA induces the rapid apoptosis of colorectal cancer cells. Mol. Cell 7: 673-682.
2. Nakano, K., et al. 2001. PUMA, a novel proapoptotic gene, is induced by p53. Mol. Cell 7: 683-694.

CHROMOSOMAL LOCATION

Genetic locus: BBC3 (human) mapping to 19q13.32.

PRODUCT

PUMA 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 PUMA shRNA Plasmid (h): sc-37153-SH and PUMA shRNA (h) Lentiviral Particles: sc-37153-V as alternate gene silencing products.

For independent verification of PUMA (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-37153A, sc-37153B and sc-37153C.

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

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

PUMAα (B-6): sc-377015 is recommended as a control antibody for monitoring of PUMA 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 PUMA gene expression knockdown using RT-PCR Primer: PUMA (h)-PR: sc-37153-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. Fraser, M., et al. 2008. Akt promotes cisplatin resistance in human ovarian cancer cells through inhibition of p53 phosphorylation and nuclear function. Int. J. Cancer 122: 534-546.
2. Zheng, C., et al. 2012. Mesothelin regulates growth and apoptosis in pancreatic cancer cells through p53-dependent and -independent signal pathway. J. Exp. Clin. Cancer Res. 31: 84.
3. Wang, Y., et al. 2013. SLUG is activated by nuclear factor κB and confers human alveolar epithelial A549 cells resistance to tumor necrosis factor-α-induced apoptosis. World J. Surg. Oncol. 11: 12.
4. Quast, S.A., et al. 2015. Sensitization of melanoma cells for death ligand TRAIL is based on cell cycle arrest, ROS production, and activation of proapoptotic Bcl-2 proteins. J. Invest. Dermatol. 135: 2794-2804.
5. Liu, Z., et al. 2016. Propofol inhibits growth and invasion of pancreatic cancer cells through regulation of the miR-21/Slug signaling pathway. Am. J. Transl. Res. 8: 4120-4133.
6. Liu, H., et al. 2017. BBC3 in macrophages promoted pulmonary fibrosis development through inducing autophagy during silicosis. Cell Death Dis. 8: e2657.
7. Xing, S.G., et al. 2018. Propofol induces apoptosis of non-small cell lung cancer cells via ERK1/2-dependent upregulation of PUMA. Eur. Rev. Med. Pharmacol. Sci. 22: 4341-4349.

RESEARCH USE

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