SANTA CRUZ BIOTECHNOLOGY, INC.

DJ-1 siRNA (h): sc-37080

BACKGROUND

The DJ-1 gene encodes a highly-conserved protein which is implicated in a number of cell processes. DJ-1 was first identified as a novel oncogene that transformed mouse NIH/3T3 cells in cooperation with activated Ras. Additionally, DJ-1 was cloned in rat as SP22 or CAP-1, and found to be an infertility-related sperm protein whose expression is reduced in sperm treated with toxicants. DJ-1 also positively regulates the androgen receptor (AR) by forming a complex with PIASxα, a negative regulator of AR. The gene encoding human DJ-1 maps to chromosome 1p36.23, a region identified as a hot spot of chromosome abnormalities in several tumor cells. Subsequently, mutations in the DJ-1 gene have been implicated in Parkinson's disease, and loss of DJ-1 function leads to neurodegeneration. DJ-1 is a ubiquitously expressed protein that is induced in response to growth stimuli and translocates from the cytoplasm to the nucleus during the S phase of the cell cycle.

REFERENCES

1. Nagakubo, D., et al. 1997. DJ-1, a novel oncogene which transforms mouse NIH/3T3 cells in cooperation with Ras. Biochem. Biophys. Res. Commun. 231: 509-513.
2. Taira, T., et al. 2001. Molecular cloning of human and mouse DJ-1 genes and identification of Sp1-dependent activation of the human DJ-1 promoter. Gene 263: 285-292.

CHROMOSOMAL LOCATION

Genetic locus: PARK7 (human) mapping to 1p36.23.

PRODUCT

DJ-1 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 DJ-1 shRNA Plasmid (h): sc-37080-SH and DJ-1 shRNA (h) Lentiviral Particles: sc-37080-V as alternate gene silencing products.

For independent verification of DJ-1 (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-37080A, sc-37080B and sc-37080C.

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

DJ-1 siRNA (h) is recommended for the inhibition of DJ-1 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

DJ-1 (D-4): sc-55572 is recommended as a control antibody for monitoring of DJ-1 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 DJ-1 gene expression knockdown using RT-PCR Primer: DJ-1 (h)-PR: sc-37080-PR (20 µl, 431 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Opsahl, J.A., et al. 2010. Increased interaction between DJ-1 and the Mi-2/nucleosome remodelling and deacetylase complex during cellular stress. Proteomics 10: 1494-1504.
2. Bitar, M.S., et al. 2012. Decline in DJ-1 and decreased nuclear translocation of Nrf2 in Fuchs endothelial corneal dystrophy. Invest. Ophthalmol. Vis. Sci. 53: 5806-5813.
3. Ismail, I.A., et al. 2014. DJ-1 upregulates breast cancer cell invasion by repressing KLF17 expression. Br. J. Cancer 110: 1298-1306.
4. Srivastava, S., et al. 2016. Cardioprotective effects of $Cu^{(II)}$ATSM in human vascular smooth muscle cells and cardiomyocytes mediated by Nrf2 and DJ-1. Sci. Rep. 6: 7.
5. Wu, L., et al. 2017. Salidroside protects against MPP^{+}-induced neuronal injury through DJ-1-Nrf2 antioxidant pathway. Evid. Based Complement. Alternat. Med. 2017: 5398542.
6. Kwon, H.S., et al. 2018. Effect of DJ-1 downregulation on the functions of the first trimester extravillous trophoblasts. Reprod. Sci. 25: 1436-1445.
7. Leeds, J., et al. 2020. Protective role of DJ-1 in endotoxin-induced acute kidney injury. Am. J. Physiol. Renal Physiol. 319: F654-F663.
8. Das, F., et al. 2022. Oncoprotein DJ-1 interacts with mTOR complexes to effect transcription factor Hif1α-dependent expression of collagen I (α2) during renal fibrosis. J. Biol. Chem. 298: 102246.

RESEARCH USE

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