

# $\alpha$ -synuclein siRNA (h): sc-29619

## BACKGROUND

The synuclein family members, including  $\alpha$ -synuclein (also designated NACP for non- $\beta$ -Amyloid component) and  $\beta$ -synuclein, are predominantly expressed in the brain and are speculated to be involved in synaptic regulation and neuronal plasticity.  $\alpha$ -synuclein is localized to neuronal cell bodies and synapses.  $\alpha$ -synuclein was first identified as a component of Alzheimer's disease amyloid plaques. Abnormal platelet function in Alzheimer's disease has been demonstrated. During megakaryocytic differentiation  $\alpha$ -synuclein has been found to be upregulated, while  $\beta$ -synuclein is downregulated, indicating that coordinate expression of synucleins may be important during hematopoietic cell differentiation. A mutant form of  $\alpha$ -synuclein has been found in patients with early onset Parkinson's disease.

## CHROMOSOMAL LOCATION

Genetic locus: SNCA (human) mapping to 4q22.1.

## PRODUCT

$\alpha$ -synuclein 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see  $\alpha$ -synuclein shRNA Plasmid (h): sc-29619-SH and  $\alpha$ -synuclein shRNA (h) Lentiviral Particles: sc-29619-V as alternate gene silencing products.

For independent verification of  $\alpha$ -synuclein (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-29619A, sc-29619B and sc-29619C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

$\alpha$ -synuclein siRNA (h) is recommended for the inhibition of  $\alpha$ -synuclein 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  $\mu$ M in 66  $\mu$ l. 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

$\alpha$ -synuclein (211): sc-12767 is recommended as a control antibody for monitoring of  $\alpha$ -synuclein 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  $\alpha$ -synuclein gene expression knockdown using RT-PCR Primer:  $\alpha$ -synuclein (h)-PR: sc-29619-PR (20  $\mu$ l, 548 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

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- Dansithong, W., et al. 2015. Generation of SNCA cell models using zinc finger nuclease (ZFN) technology for efficient high-throughput drug screening. *PLoS ONE* 10: e0136930.
- Baksi, S., et al. 2016.  $\alpha$ -synuclein modulates retinal iron homeostasis by facilitating the uptake of transferrin-bound iron: implications for visual manifestations of Parkinson's disease. *Free Radic. Biol. Med.* 97: 292-306.
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- Paillusson, S., et al. 2017.  $\alpha$ -synuclein binds to the ER-mitochondria tethering protein VAPB to disrupt Ca<sup>2+</sup> homeostasis and mitochondrial ATP production. *Acta Neuropathol.* 134: 129-149.
- Baksi, S. and Singh, N. 2017.  $\alpha$ -synuclein impairs ferritinophagy in the retinal pigment epithelium: implications for retinal iron dyshomeostasis in Parkinson's disease. *Sci. Rep.* 7: 12843.
- Shin, W.H. and Chung, K.C. 2020. Death-associated protein kinase 1 phosphorylates  $\alpha$ -synuclein at Ser129 and exacerbates rotenone-induced toxic aggregation of  $\alpha$ -synuclein in dopaminergic SH-SY5Y cells. *Exp. Neurobiol.* 29: 207-218.
- Mahoney-Sanchez, L., et al. 2022.  $\alpha$  synuclein determines ferroptosis sensitivity in dopaminergic neurons via modulation of ether-phospholipid membrane composition. *Cell Rep.* 40: 111231.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.