

# AChR $\alpha$ 7 siRNA (r): sc-270402

## BACKGROUND

AChR $\alpha$ 7 (acetylcholine receptor subunit  $\alpha$ -7), also known as NACHRA7 (neuronal acetylcholine receptor subunit  $\alpha$ -7) or CHRNA7 (cholinergic receptor, nicotinic,  $\alpha$  7), is a 502 amino acid multi-pass membrane protein that belongs to the ligand-gated ion channel family, the acetylcholine receptor subfamily, and the  $\alpha$ -7/CHRNA7 sub-subfamily. Existing as a homopentamer, AChR $\alpha$ 7 interacts with RIC3, which is required for proper folding and assembly. After binding acetylcholine, the AChR undergoes an extensive conformation change that leads to the opening of an ion-conducting channel across the plasma membrane. The gene that encodes AChR $\alpha$ 7 maps to human chromosome 15q13.3.

## REFERENCES

- Chini, B., et al. 1994. Molecular cloning and chromosomal localization of the human  $\alpha$  7-nicotinic receptor subunit gene (CHRNA7). *Genomics* 19: 379-381.
- Peng, X., et al. 1994. Human  $\alpha$  7 acetylcholine receptor: cloning of the  $\alpha$  7 subunit from the SH-SY5Y cell line and determination of pharmacological properties of native receptors and functional  $\alpha$  7 homomers expressed in *Xenopus* oocytes. *Mol. Pharmacol.* 45: 546-554.
- Elliott, K.J., et al. 1996. Comparative structure of human neuronal  $\alpha$  2- $\alpha$  7 and  $\beta$  2- $\beta$  4 nicotinic acetylcholine receptor subunits and functional expression of the  $\alpha$  2,  $\alpha$  3,  $\alpha$  4,  $\alpha$  7,  $\beta$  2, and  $\beta$  4 subunits. *J. Mol. Neurosci.* 7: 217-228.
- Groot Kormelink, P.J., et al. 1997. Cloning and sequence of full-length cDNAs encoding the human neuronal nicotinic acetylcholine receptor (nAChR) subunits  $\beta$ 3 and  $\beta$ 4 and expression of seven nAChR subunits in the human neuroblastoma cell line SH-SY5Y and/or IMR-32. *FEBS Lett.* 400: 309-314.
- Riley, B., et al. 2002. A 3-Mb map of a large segmental duplication overlapping the  $\alpha$ 7-nicotinic acetylcholine receptor gene (CHRNA7) at human 15q13-q14. *Genomics* 79: 197-209.
- Williams, M.E., et al. 2005. RIC-3 promotes functional expression of the nicotinic acetylcholine receptor  $\alpha$ 7 subunit in mammalian cells. *J. Biol. Chem.* 280: 1257-1263.

## CHROMOSOMAL LOCATION

Genetic locus: Chrna7 (rat) mapping to 1q22.

## PRODUCT

AChR $\alpha$ 7 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see AChR $\alpha$ 7 shRNA Plasmid (r): sc-270402-SH and AChR $\alpha$ 7 shRNA (r) Lentiviral Particles: sc-270402-V as alternate gene silencing products.

For independent verification of AChR $\alpha$ 7 (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-270402A, sc-270402B and sc-270402C.

## 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

AChR $\alpha$ 7 siRNA (r) is recommended for the inhibition of AChR $\alpha$ 7 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  $\mu$ 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

AChR $\alpha$ 7 (319): sc-58607 is recommended as a control antibody for monitoring of AChR $\alpha$ 7 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 AChR $\alpha$ 7 gene expression knockdown using RT-PCR Primer: AChR $\alpha$ 7 (r)-PR: sc-270402-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Vang, A., et al. 2017. Effect of  $\alpha$ 7 nicotinic acetylcholine receptor activation on cardiac fibroblasts: a mechanism underlying RV fibrosis associated with cigarette smoke exposure. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 312: L748-L759.

## 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.