

# Nociceptin siRNA (h): sc-106306

## BACKGROUND

Nociception, a pain response mechanism, occurs in response to stimuli that threaten the integrity of an organism. The first synapses produced as a result of the initiation of nociception are modulated by excitatory amino acids (glutamate and aspartate) and many peptides (substance P, CGRP, CCK, endogenous opioids). Nociceptin (also designated orphanin FQ) is a neuronal peptide that is similar to opioid peptides. Nociceptin activates KOR-3 ( $\kappa$ -type opioid receptor, also designated ORL1), a G protein-coupled receptor. Although similar to dynorphin A, a  $\kappa$  opioid peptide, nociceptin functions to make animals hyperreactive to nociceptive stimulations. Nociceptin is also involved in locomotor behavior and may be involved in the modulation of synaptic plasticity in learning and memory.

## REFERENCES

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2. Reinscheid, R.K., et al. 1995. Orphanin FQ: a neuropeptide that activates an opioidlike G protein-coupled receptor. *Science* 270: 792-794.
3. Florin, S., et al. 1996. Nociceptin stimulates locomotion and exploratory behaviour in mice. *Eur. J. Pharmacol.* 317: 9-13.
4. Yu, T.P., et al. 1998. Orphanin FQ/nociceptin inhibits synaptic transmission and long-term potentiation in rat dentate gyrus through postsynaptic mechanisms. *J. Neurophysiol.* 80: 1277-1284.
5. Mollereau, C., et al. 1999. Distinct mechanisms for activation of the opioid receptor-like 1 and  $\kappa$ -opioid receptors by nociceptin and dynorphin A. *Mol. Pharmacol.* 55: 324-331.
6. Koizumi, M., et al. 2004. Exogenous, but not endogenous nociceptin modulates mesolimbic dopamine release in mice. *J. Neurochem.* 89: 257-263.
7. Marti, M., et al. 2004. Blockade of nociceptin/orphanin FQ transmission in rat substantia nigra reverses haloperidol-induced akinesia and normalizes nigral glutamate release. *J. Neurochem.* 91: 1501-1504.
8. Orsini, M.J., et al. 2005. The nociceptin pharmacophore site for opioid receptor binding derived from the NMR structure and bioactivity relationships. *J. Biol. Chem.* 280: 8134-8142.

## CHROMOSOMAL LOCATION

Genetic locus: PNOC (human) mapping to 8p21.1.

## PRODUCT

Nociceptin siRNA (h) is a target-specific 19-25 nt siRNA 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 Nociceptin shRNA Plasmid (h): sc-106306-SH and Nociceptin shRNA (h) Lentiviral Particles: sc-106306-V as alternate gene silencing products.

## PROTOCOLS

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

## 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

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

Nociceptin (F-10): sc-398073 is recommended as a control antibody for monitoring of Nociceptin 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-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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 Nociceptin gene expression knockdown using RT-PCR Primer: Nociceptin (h)-PR: sc-106306-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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