

# OR4N2 shRNA Plasmid (h): sc-92137-SH

## BACKGROUND

Olfactory receptors interact with odorant molecules in the nose to initiate a neuronal response that leads to the perception of smell. While they share a seven transmembrane domain structure with many neurotransmitter and hormone receptors, olfactory receptors are responsible for the recognition and transduction of odorant signals. The olfactory receptor gene family is the largest in the genome. OR4N2 (olfactory receptor 4N2), also known as OR14-13 or OR14-8, is a 307 amino acid multi-pass membrane protein that belongs to the G protein-coupled receptor 1 family. The gene that encodes OR4N2 consists of more than 900 bases and maps to human chromosome 14q11.2. Housing over 700 genes, chromosome 14 comprises nearly 3.5% of the human genome. Chromosome 14 encodes the presenilin 1 (PSEN1) gene, which is one of the three key genes associated with the development of Alzheimer's disease (AD). The SERPINA1 gene is also located on chromosome 14 and, when defective, leads to the genetic disorder  $\alpha$ 1-antitrypsin deficiency, which is characterized by severe lung complications and liver dysfunction.

## REFERENCES

1. Zech, L., Gahrton, G., Hammarström, L., Juliusson, G., Mellstedt, H., Robèrt, K.H. and Smith, C.I. 1984. Inversion of chromosome 14 marks human T-cell chronic lymphocytic leukaemia. *Nature* 308: 858-860.
2. Aisenberg, A.C., Krontiris, T.G., Mak, T.W. and Wilkes, B.M. 1985. Rearrangement of the gene for the  $\beta$  chain of the T-cell receptor in T-cell chronic lymphocytic leukemia and related disorders. *N. Engl. J. Med.* 313: 529-533.
3. Schellenberg, G.D., Bird, T.D., Wijsman, E.M., Orr, H.T., Anderson, L., Nemens, E., White, J.A., Bonnycastle, L., Weber, J.L. and Alonso, M.E. 1992. Genetic linkage evidence for a familial Alzheimer's disease locus on chromosome 14. *Science* 258: 668-671.
4. Malnic, B., Godfrey, P.A. and Buck, L.B. 2004. The human olfactory receptor gene family. *Proc. Natl. Acad. Sci. USA* 101: 2584-2589.
5. Avramopoulos, D., Fallin, M.D. and Bassett, S.S. 2005. Linkage to chromosome 14q in Alzheimer's disease (AD) patients without psychotic symptoms. *Am. J. Med. Genet. B Neuropsychiatr. Genet.* 132B: 9-13.
6. Larner, A.J. and Doran, M. 2009. Genotype-phenotype relationships of presenilin-1 mutations in Alzheimer's disease: an update. *J. Alzheimers Dis.* 17: 259-265.

## CHROMOSOMAL LOCATION

Genetic locus: OR4N2 (human) mapping to 14q11.2.

## RESEARCH USE

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.

## PRODUCT

OR4N2 shRNA Plasmid (h) is a pool of 2 target-specific lentiviral vector plasmids each encoding 19-25 nt (plus hairpin) shRNAs designed to knock down gene expression. Each plasmid contains a puromycin resistance gene for the selection of cells stably expressing shRNA. Each vial contains 20  $\mu$ g of lyophilized shRNA plasmid DNA. Suitable for up to 20 transfections. Also see OR4N2 siRNA (h): sc-92137 and OR4N2 shRNA (h) Lentiviral Particles: sc-92137-V as alternate gene silencing products.

## STORAGE AND RESUSPENSION

Store lyophilized shRNA plasmid DNA at 4° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at 4° C for short term storage or -80° C for long term storage. Avoid repeated freeze thaw cycles.

Resuspend lyophilized shRNA plasmid DNA in 200  $\mu$ l of the deionized water provided. Resuspension of the shRNA plasmid DNA in 200  $\mu$ l of deionized water makes a 0.1  $\mu$ g/ $\mu$ l solution in a 10 mM Tris, 1 mM EDTA buffered solution.

## APPLICATIONS

OR4N2 shRNA Plasmid (h) is recommended for the inhibition of OR4N2 expression in human cells.

## SUPPORT REAGENTS

For optimal shRNA Plasmid transfection efficiency, Santa Cruz Biotechnology's shRNA Plasmid Transfection Reagent: sc-108061 (0.2 ml) and shRNA Plasmid Transfection Medium: sc-108062 (20 ml) are recommended. Control shRNAs are available as 20  $\mu$ g lyophilized plasmid DNA. Each encodes a scrambled shRNA sequence that will not lead to the specific degradation of any known cellular mRNA. Control shRNA Plasmids include: sc-108060, sc-108065 and sc-108066.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor OR4N2 gene expression knockdown using RT-PCR Primer: OR4N2 (h)-PR: sc-92137-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## PROTOCOLS

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