

Olfr137 siRNA (m): sc-150520

BACKGROUND

Olfr137 (Or2j3, olfactory receptor family 2 subfamily J member 3, MOR256-18) is an olfactory receptor. Olfactory receptor (OR) (odorant receptor, chemoreceptor) genes are the largest (~900 genes in human/ ~1500 in mouse) of the vertebrate G-protein coupled receptor (GPCR) superfamily, responsible for programming the ability to sense an airborne chemical environment. Olfactory receptors bind odorant molecules, and initiate a neuronal response as perception of smell. OR protein expression is abundant within cilia and along synapses of olfactory sensory neurons, and to lesser extent within airway epithelium. Olfactory receptors activate an extensive array of intracellular G protein (G_{olf} and/or G_o), adenylate cyclase, ATP to cyclic AMP (cAMP) cascades. cAMP modulates calcium and sodium flux through gated ion channels, thereby depolarizing and triggering ion gradient-dependent action potentials into and through the brain. The olfactory bulb neural macro-structure of the vertebrate forebrain is responsible for olfaction, the sense of smell. Sensory smell processing within the olfactory bulb initiates at spherical shaped "glomerulus" sub-structures where OR expressing, smell sensing chemical synapses form. These glomeruli networks of OR expressing peripheral sensory neurons, transmit receptor-specific activity to central neurons.

REFERENCES

1. Young, J.M., et al. 2002. Different evolutionary processes shaped the mouse and human olfactory receptor gene families. *Hum. Mol. Genet.* 11: 535-546. Erratum in 11: 1683.
2. Young, J.M., et al. 2003. Odorant receptor expressed sequence tags demonstrate olfactory expression of over 400 genes, extensive alternate splicing and unequal expression levels. *Genome Biol.* 4: R71.
3. Gu, X., et al. 2014. Chemosensory functions for pulmonary neuroendocrine cells. *Am. J. Respir. Cell. Mol. Biol.* 50: 637-646.
4. Yasi, E.A., et al. 2019. Rapid deorphanization of human olfactory receptors in yeast. *Biochemistry* 58: 2160-2166.
5. Olender, T., et al. 2020. A unified nomenclature for vertebrate olfactory receptors. *BMC Evol. Biol.* 20: 42.
6. Zhu, K.W., et al. 2022. Decoding the olfactory map through targeted transcriptomics links murine olfactory receptors to glomeruli. *Nat. Commun.* 13: 5137.

CHROMOSOMAL LOCATION

Genetic locus: Olfr137 (mouse) mapping to 17 B1.

PRODUCT

Olfr137 siRNA (m) is a pool of 2 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Olfr137 shRNA Plasmid (m): sc-150520-SH and Olfr137 shRNA (m) Lentiviral Particles: sc-150520-V as alternate gene silencing products.

For independent verification of Olfr137 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-150520A and sc-150520B.

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

APPLICATIONS

Olfr137 siRNA (m) is recommended for the inhibition of Olfr137 expression in mouse 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 μ M in 66 μ 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Olfr137 gene expression knockdown using RT-PCR Primer: Olfr137 (m)-PR: sc-150520-PR (20 μ 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.