SANTA CRUZ BIOTECHNOLOGY, INC.

CNG-β3 siRNA (m): sc-45564

BACKGROUND

Cyclic nucleotide-gated (CNG) cation channels are heteromeric complexes made up of principal α and modulatory β subunits. The α (α) subunits consist of CNG1-3 and form functional cation channels by themselves. The β (β) subunits consist of CNG4-6 and, unlike the α subunits, do not form functional channels, but rather modify the properties of channels. formed by CNG1-3. CNG channels are essential components of olfactory and visual transduction. CNG proteins are present in cone and rod photoreceptors and in the pineal gland, and they contribute to modulating arterial blood pressure. CNG6, also designated cyclic-nucleotide-gated cation channel β 3 (CNG-β3), is an integral membrane protein that can form a heterooligomeric complex with CNG-3. CNG-β3 is activated by cGMP and this activation leads to the depolarization of rod photoreceptors as a result of cation channel being opened. CNG-β3 is expressed in a small group of retinal photoreceptor cells and in testis. Mutations in the gene encoding for CNG-β3, can cause achromatopsia, an autosomal recessively inherited disease characterized by low visual acuity, photophobia, a lack of color discrimination, and nystagmus.

REFERENCES

1. Sautter, A., et al. 1998. An isoform of the rod photoreceptor cyclic necleotide-gated channel β subunit expressed in olfactory neurons. Proc. Natl. Acad. Sci. USA 95: 4696-4701.
2. Gerstner, A., et al. 2000. Molecular cloning and functional characterization of a new modulatory cyclic nucleotide-gated channel subunit from mouse retina. J. Neurosci. 20: 1324-1332.
3. Peng, C., et al. 2003. Functionally important calmodulin-binding sites in both NH_2- and COOH-terminal regions of the cone photoreceptor cyclic nucleotide-gated channel CNG-β3 subunit. J. Biol. Chem. 278: 24617-24623.
4. Johnson, S., et al. 2004. Achromatopsia caused by novel mutations in both CNG-α3 and CNG-β3. J. Med. Genet. 41: e20.
5. Michaelides, M., et al. 2004. Progressive cone dystrophy associated with mutation in CNG-β3. Invest. Ophthalmol. Vis. Sci. 45: 1975-1982.
6. Okada, A., et al. 2004. Functional role of hCngb3 in regulation of human cone cng channel: effect of rod monochromacy-associated mutations in hCNGB3 on channel function. Invest. Ophthalmol. Vis. Sci. 45: 2324-2332.

CHROMOSOMAL LOCATION

Genetic locus: Cngb3 (mouse) mapping to 4 A3.

PRODUCT

CNG-β3 siRNA (m) 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CNG-β3 shRNA Plasmid (m): sc-45564-SH and CNG-β3 shRNA (m) Lentiviral Particles: sc-45564-V as alternate gene silencing products.

For independent verification of CNG-β3 (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-45564A, sc-45564B and sc-45564C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

CNG-β3 siRNA (m) is recommended for the inhibition of CNG-β3 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 µM in 66 µl. 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

CNG-β3 (H-3): sc-390088 is recommended as a control antibody for monitoring of CNG-β3 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 CNG-β3 gene expression knockdown using RT-PCR Primer: CNG-β3 (m)-PR: sc-45564-PR (20 µl). 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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.