SANTA CRUZ BIOTECHNOLOGY, INC.

HRG4 siRNA (m): sc-75300

BACKGROUND

HRG4 (human retinal protein 4), also known as UNC119, is a 240 amino acid photoreceptor synaptic protein belonging to the PDE6D/unc-119 family. HRG4 is retinal-specific and localizes to photoreceptor synapses in the outer plexiform layer of the retina. HRG4 may play a role in the mechanism of photoreceptor neurotransmitter release through the synaptic vesicle cycle. Mutations in the gene encoding HRG4 may lead to cone-rod dystrophy, an inherited progressive disease that causes deterioration of cone and rod photoreceptor cells and often results in blindness. It is suggested that HRG4 is the only synaptic protein known to be highly enriched in photoreceptor ribbon synapses. HRG4 interacts with CaBP4 in the absence of calcium.

REFERENCES

1. Higashide, T., McLaren, M.J. and Inana, G. 1998. Localization of HRG4, a photoreceptor protein homologous to Unc-119, in ribbon synapse. Invest. Ophthalmol. Vis. Sci. 39: 690-698.
2. Higashide, T. and Inana, G. 1999. Characterization of the gene for HRG4 (UNC119), a novel photoreceptor synaptic protein homologous to unc-119. Genomics 57: 446-450.
3. Kobayashi, A., Higashide, T., Hamasaki, D., Kubota, S., Sakuma, H., An, W., Fujimaki, T., McLaren, M.J., Weleber, R.G. and Inana, G. 2000. HRG4 (UNC119) mutation found in cone-rod dystrophy causes retinal degeneration in a transgenic model. Invest. Ophthalmol. Vis. Sci. 41: 3268-3277.
4. Maduro, M.F., Gordon, M., Jacobs, R. and Pilgrim, D.B. 2000. The UNC-119 family of neural proteins is functionally conserved between humans, *Drosophila* and *C. elegans*. J. Neurogenet. 13: 191-212.
5. Kubota, S., Kobayashi, A., Mori, N., Higashide, T., McLaren, M.J. and Inana, G. 2002. Changes in retinal synaptic proteins in the transgenic model expressing a mutant HRG4 (UNC119). Invest. Ophthalmol. Vis. Sci. 43: 308-313.
6. Kobayashi, A., Kubota, S., Mori, N., McLaren, M.J. and Inana, G. 2003. Photoreceptor synaptic protein HRG4 (UNC119) interacts with ARL2 via a putative conserved domain. FEBS Lett. 534: 26-32.
7. Memon, A.A., Sorensen, B.S., Melgard, P., Fokdal, L., Thykjaer, T. and Nexo, E. 2004. Expression of HER3, HER4 and their ligand heregulin-4 is associated with better survival in bladder cancer patients. Br. J. Cancer 91: 2034-2041.
8. Mori, N., Ishiba, Y., Kubota, S., Kobayashi, A., Higashide, T., McLaren, M.J. and Inana, G. 2006. Truncation mutation in HRG4 (UNC119) leads to mitochondrial ANT-1-mediated photoreceptor synaptic and retinal degeneration by apoptosis. Invest. Ophthalmol. Vis. Sci. 47: 1281-1292.
9. Ishiba, Y., Higashide, T., Mori, N., Kobayashi, A., Kubota, S., McLaren, M.J., Satoh, H., Wong, F. and Inana, G. 2007. Targeted inactivation of synaptic HRG4 (UNC119) causes dysfunction in the distal photoreceptor and slow retinal degeneration, revealing a new function. Exp. Eye Res. 84: 473-485.

CHROMOSOMAL LOCATION

Genetic locus: Unc119 (mouse) mapping to 11 B5.

PRODUCT

HRG4 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 HRG4 shRNA Plasmid (m): sc-75300-SH and HRG4 shRNA (m) Lentiviral Particles: sc-75300-V as alternate gene silencing products.

For independent verification of HRG4 (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-75300A, sc-75300B and sc-75300C.

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

HRG4 siRNA (m) is recommended for the inhibition of HRG4 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor HRG4 gene expression knockdown using RT-PCR Primer: HRG4 (m)-PR: sc-75300-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.