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# GABA<sub>B</sub> R2 siRNA (m): sc-42464

## BACKGROUND

In the central nervous system (CNS),  $\gamma$ -aminobutyric acid (GABA) is the main inhibitory neurotransmitter that functions to regulate neuronal firing. GABA exerts its effects through two different kinds of receptors: ionotropic receptors (GABA<sub>A</sub> R and GABA<sub>C</sub> R), which produce fast inhibitory signals, and metabotropic receptors (GABA<sub>B</sub> R), which produce slow inhibitory signals. The GABA<sub>B</sub> R receptor is a heterodimer that consists of two multi-pass membrane proteins, designated GABA<sub>B</sub> R1 and GABA<sub>B</sub> R2, both of which belong to the G protein-coupled receptor family and are highly expressed in brain tissue. Together, GABA<sub>B</sub> R1 and GABA<sub>B</sub> R2 play a crucial role in the fine-tuning of inhibitory synaptic transmissions and are implicated in slow wave sleep, muscle relaxation, hippocampal long-term potentiation and antinociception events. Both GABA<sub>B</sub> R1 and GABA<sub>B</sub> R2 are regulated by G proteins that have a variety of functions, including activation of potassium channels, inhibition of adenylyl cyclase (A cyclase) activity and modulation of inositol phospholipid hydrolysis.

## REFERENCES

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- Balasubramanian, S., et al. 2004. Hetero-oligomerization between GABA<sub>A</sub> and GABA<sub>B</sub> receptors regulates GABA<sub>B</sub> receptor trafficking. *J. Biol. Chem.* 279: 18840-18850.
- Brock, C., et al. 2005. Assembly-dependent surface targeting of the heterodimeric GABA<sub>B</sub> Receptor is controlled by COPI but not 14-3-3. *Mol. Biol. Cell* 16: 5572-5578.
- Osawa, Y., et al. 2006. Functional expression of the GABA<sub>B</sub> receptor in human airway smooth muscle. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 291: L923-L931.
- Balasubramanian, S., et al. 2007. GABA<sub>B</sub> receptor association with the PDZ scaffold Mupp1 alters receptor stability and function. *J. Biol. Chem.* 282: 4162-4171.
- Chang, W., et al. 2007. Complex formation with the Type B  $\gamma$ -aminobutyric acid receptor affects the expression and signal transduction of the extracellular calcium-sensing receptor. Studies with HEK-293 cells and neurons. *J. Biol. Chem.* 282: 25030-25040.
- Agrawal, A., et al. 2008.  $\gamma$ -aminobutyric acid receptor genes and nicotine dependence: evidence for association from a case-control study. *Addiction* 103: 1027-1038.

## CHROMOSOMAL LOCATION

Genetic locus: *Gabbr2* (mouse) mapping to 4 B1.

## PROTOCOLS

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

## PRODUCT

GABA<sub>B</sub> R2 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see GABA<sub>B</sub> R2 shRNA Plasmid (m): sc-42464-SH and GABA<sub>B</sub> R2 shRNA (m) Lentiviral Particles: sc-42464-V as alternate gene silencing products.

For independent verification of GABA<sub>B</sub> R2 (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-42464A, sc-42464B and sc-42464C.

## 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

GABA<sub>B</sub> R2 siRNA (m) is recommended for the inhibition of GABA<sub>B</sub> R2 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  $\mu$ 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

GABA<sub>B</sub> R2 (H-10): sc-393270 is recommended as a control antibody for monitoring of GABA<sub>B</sub> R2 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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GABA<sub>B</sub> R2 gene expression knockdown using RT-PCR Primer: GABA<sub>B</sub> R2 (m)-PR: sc-42464-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.