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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

www.szabo-scandic.com

linkedin.com/company/szaboscandic

SANTA CRUZ BIOTECHNOLOGY, INC.

$GABA_A$ Rγ1 siRNA (m): sc-42448

BACKGROUND

GAD-65 and GAD-67, glutamate decarboxylases, function to catalyze the production of GABA (γ-aminobutyric acid). In the central nervous system, GABA functions as the main inhibitory transmitter by increasing a Cl^- (chloride) conductance that inhibits neuronal firing. GABA has been shown to activate both ionotropic ($GABA_A$) and metabotropic ($GABA_B$) receptors, as well as a third class of receptors called $GABA_C$. The γ subunit of $GABA_A$ receptors are important for benzodiazepine binding and modulation of GABA-mediated Cl^- current. $GABA_A$ Rγ1 (γ-aminobutyric acid (GABA) A receptor, γ 1), also known as GABRG1, is a 465 amino acid multi-pass membrane protein belonging to the ligand-gated ionic channel (TC 1.A.9) family. $GABA_A$ Rγ1 participates in neurotransmission inhibition and has been linked to alcohol dependence.

REFERENCES

1. Wilcox, A.S., et al. 1992. Human chromosomal localization of genes encoding the γ 1 and γ 2 subunits of the γ-aminobutyric acid receptor indicates that members of this gene family are often clustered in the genome. Proc. Natl. Acad. Sci. USA 89: 5857-5861.
2. Whiting, P.J., et al. 1999. Molecular and functional diversity of the expanding $GABA_A$ receptor gene family. Ann. N.Y. Acad. Sci. 868: 645-653.
3. Nymann-Andersen, J., et al. 2002. Subunit specificity and interaction domain between $GABA_A$ receptor-associated protein (GABARAP) and $GABA_A$ receptors. J. Neurochem. 80: 815-823.
4. Ittiwut, C., et al. 2008. Interpopulation linkage disequilibrium patterns of GABRA2 and GABRG1 genes at the GABA cluster locus on human chromosome 4. Genomics 91: 61-69.
5. Ray, L.A., et al. 2009. Associations among GABRG1, level of response to alcohol, and drinking behaviors. Alcohol. Clin. Exp. Res. 33: 1382-1390.
6. Enoch, M.A., et al. 2009. GABRG1 and GABRA2 as independent predictors for alcoholism in two populations. Neuropsychopharmacology 34: 1245-1254.
7. Craddock, N., et al. 2010. Strong genetic evidence for a selective influence of $GABA_A$ receptors on a component of the bipolar disorder phenotype. Mol. Psychiatry 15: 146-153.

CHROMOSOMAL LOCATION

Genetic locus: Gabrg1 (mouse) mapping to 5 C3.1.

PRODUCT

$GABA_A$ Rγ1 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 $GABA_A$ Rγ1 shRNA Plasmid (m): sc-42448-SH and $GABA_A$ Rγ1 shRNA (m) Lentiviral Particles: sc-42448-V as alternate gene silencing products.

For independent verification of $GABA_A$ Rγ1 (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-42448A, sc-42448B and sc-42448C.

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

$GABA_A$ Rγ1 siRNA (m) is recommended for the inhibition of $GABA_A$ Rγ1 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 $GABA_A$ Rγ1 gene expression knockdown using RT-PCR Primer: $GABA_A$ Rγ1 (m)-PR: sc-42448-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.