SANTA CRUZ BIOTECHNOLOGY, INC.

A cyclase IV siRNA (m): sc-29603

BACKGROUND

Adenylyl cyclases function to convert ATP to cyclic AMP in response to activation by a variety of hormones, neurotransmitters and other regulatory molecules. Cyclic AMP, in turn, activates several other target molecules to control a broad range of diverse phenomena such as metabolism, gene transcription and memory. Adenylyl cyclases respond to receptor-initiated signals, mediated by the G_s and G_i heterotrimeric G proteins. The binding of an agonist to a G_s-coupled receptor catalyzes the exchange of GDP (bound to $G_{\alpha s}$) for GTP, the dissociation of GTP-$G_{\alpha s}$ from $G_{\beta\gamma}$ and $G_{\alpha s}$-mediated activation of adenylyl cyclase. Adenylyl cyclase IV (AC IV) and IX mRNA are expressed in all kidney nephron segments. AC IV exhibits moderate staining in type II and type IV fibrocytes in rat cochlea and immunoreactivity is also observed in type I fibrocytes. Activation of the D2 dopaminergic and m4 muscarine receptors inhibits the activity of adenylyl cyclase isozymes I, V, VI and VIII, whereas type II, IV and VII are stimulated and type III is not affected.

REFERENCES

1. Gilman, A.G. 1987. G proteins: transducers of receptor-generated signals. Annu. Rev. Biochem. 56: 615-649.
2. Bourne, H.R., et al. 1990. The GTPase superfamily: a conserved switch for diverse cell functions. Nature 348: 125-132.
3. Tang, W.J., et al. 1992. Adenylyl cyclases. Cell 70: 869-872.
4. Taussig, R., et al. 1994. Distinct patterns of bidirectional regulation of mammalian adenylyl cyclases. J. Biol. Chem. 269: 6093-6100.
5. Nevo, I., et al. 1998. Regulation of adenylyl cyclase isozymes on acute and chronic activation of inhibitory receptors. Mol. Pharmacol. 54: 419-426.
6. Drescher, M.J., et al. 2000. Immunohistochemical localization of adenyl cyclase isoforms in the lateral wall of the rat cochlea. Brain Res. Mol. Brain Res. 76: 289-298.
7. Bek, M.J., et al. 2001. Differential expression of adenylyl cyclases in the rat nephron. Kidney Int. 60: 890-899.

CHROMOSOMAL LOCATION

Genetic locus: Adcy4 (mouse) mapping to 14 C3.

PRODUCT

A cyclase IV 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 A cyclase IV shRNA Plasmid (m): sc-29603-SH and A cyclase IV shRNA (m) Lentiviral Particles: sc-29603-V as alternate gene silencing products.

For independent verification of A cyclase IV (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-29603A, sc-29603B and sc-29603C.

PROTOCOLS

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

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

A cyclase IV siRNA (m) is recommended for the inhibition of A cyclase IV 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 A cyclase IV gene expression knockdown using RT-PCR Primer: A cyclase IV (m)-PR: sc-29603-PR (20 µl, 449 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Olianas, M.C., et al. 2012. Coincidence signaling of dopamine D_1-like and M_1 muscarinic receptors in the regulation of cyclic AMP formation and CREB phosphorylation in mouse prefrontal cortex. Neurosignals 21: 61-74.

RESEARCH USE

For research use only, not for use in diagnostic procedures.