SANTA CRUZ BIOTECHNOLOGY, INC.

A cyclase III (C-5): sc-518064

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 cyclases of the type II family differ from other subforms in that they are conditionally stimulated by $G_{\alpha s/\beta\gamma}$ subunits and regulated by PKC-mediated C-terminal phosphorylation. Both short- and long-term activation of D_{2L} dopamine receptors result in a marked degree of sensitization of A cyclase I, II, V and IX, but not A cyclase VIII. The effects on A cyclase I, II and VIII is dependent upon the ability of these A cyclase isoforms to synergistically respond to selective activators in the presence of activated $G_{\alpha s}$. Belonging to the adenylyl cyclase class IV family, A cyclase III is activated by G_{olf}, which results in an elevation of cyclic AMP and subsequent activation of a cyclic nucleotide-gated channel.

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. Liu, C.Y., et al. 1999. FICRhR/cyclic AMP signaling in myenteric ganglia and calbindin-D28 intrinsic primary afferent neurons involves adenylyl cyclases I, III and IV. Brain Res. 826: 253-269.
6. Gibson, A.D. and Garbers, D.L. 2000. Guanylyl cyclases as a family of putative odorant receptors. Annu. Rev. Neurosci. 23 : 417-439.
7. Parkinson, N.A., et al. 2001. A nuclear location for Ca^{2+}-activated adenylyl cyclases I and III in neurons. Brain Res. Mol. Brain Res. 91: 43-49.
8. Cumbay, M.G., et al. 2001. Heterologous sensitization of recombinant adenylate cyclases by activation of D_2 dopamine receptors. J. Pharmacol. Exp. Ther. 297: 1201-1209.

CHROMOSOMAL LOCATION

Genetic locus: ADCY3 (human) mapping to 2p23.3.

SOURCE

A cyclase III (C-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 22-46 within an N-terminal cytoplasmic domain of A cyclase III of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgM in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

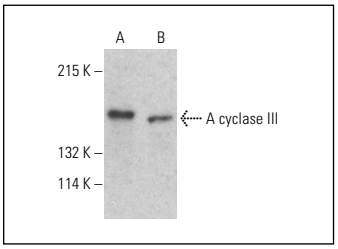
A cyclase III (C-5) is recommended for detection of A cyclase III of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for A cyclase III siRNA (h): sc-29600, A cyclase III shRNA Plasmid (h): sc-29600-SH and A cyclase III shRNA (h) Lentiviral Particles: sc-29600-V.

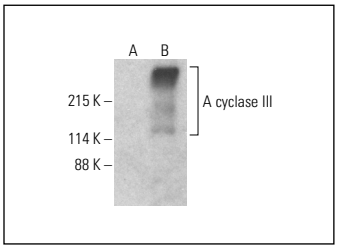
Molecular Weight of A cyclase III glycosylated forms: 170/180 kDa.

Positive Controls: mouse A cyclase III transfected 293T whole cell lysate, IMR-32 cell lysate: sc-2409 or WI-38 whole cell lysate: sc-364260.

DATA



A cyclase III (C-5): sc-518064. Western blot analysis of A cyclase III expression in IMR-32 (**A**) and WI-38 (**B**) whole cell lysates.



A cyclase III (C-5): sc-518064. Western blot analysis of A cyclase III expression in non-transfected (**A**) and mouse A cyclase III transfected (**B**) 293T whole cell lysates.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

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