SANTA CRUZ BIOTECHNOLOGY, INC.

G_{α} i-3: sc-4223 WB

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Heterotrimeric G proteins function to relay information from cell surface receptors to intracellular effectors. Each of a very broad range of receptors specifically detects an extracellular stimulus (a photon, pheromone, odorant, hormone or neurotransmitter) while the effectors (i.e. adenyl cyclase), which act to generate one or more intracellular messengers, are less numerous. In mammals, G protein α, β and γ polypeptides are encoded by at least 16, 4 and 7 genes, respectively. Most interest in G proteins has been focused on their α subunits, since these proteins bind and hydrolyze GTP and most obviously regulate the activity of the best studied effectors. Four distinct classes of G_{α} subunits have been identified; these include G_s, G_i, G_q and $G_{\alpha\ 12/13}$. The G_i class comprises all the known α subunits that are susceptible to pertussis toxin modifications, including $G_{\alpha\ i\text{-}1}$, $G_{\alpha\ i\text{-}2}$, $G_{\alpha\ i\text{-}3}$, $G_{\alpha\ o}$, $G_{\alpha\ t1}$, $G_{\alpha\ t2}$, $G_{\alpha\ z}$ and $G_{\alpha\ gust}$. Of these, the three $G_{\alpha\ i}$ subtypes function to open atrial potassium channels.

REFERENCES

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2. Simon, M.I., Strathmann, M.P. and Gautam, N. 1991. Diversity of G proteins in signal transduction. Science 252: 802-808.
3. Cali, J.J., Balcueva, E.A., Rybalkin, I. and Robishaw, J.D. 1992. Selective tissue distribution of G protein γ subunits, including a new form of the γ subunits identified by cDNA cloning. J. Biol. Chem. 267: 24023-24027.
4. McLaughlin, S.K., McKinnon, P.J. and Margolskee, R.F. 1992. Gustducin is a taste-cell-specific G protein closely related to the transducins. Nature 357: 563-569.
5. von Weizsäcker, E., Strathman, M.P. and Simon, M.I. 1992. Diversity among the β subunits of heterotrimeric GTP-binding proteins: characterization of a novel β-subunit cDNA. Biochem. Biophys. Res. Commun. 183: 350-356.
6. Conklin, B.R. and Bourne, H.R. 1993. Structural elements of G_{α} subunits that interact with $G_{\beta\ \gamma}$, receptors, and effectors. Cell 73: 631-641.
7. Ogasawara, J., Sakurai, T., Rahman, N., Kizaki, T., Hitomi, Y., Ohno, H. and Izawa, T. 2004. Acute exercise alters $G_{\alpha\ i\text{-}2}$ protein expressions through the ubiquitin-proteasome proteolysis pathway in rat adipocytes. Biochem. Biophys. Res. Commun. 323: 1109-1115.

CHROMOSOMAL LOCATION

Genetic locus: GNAI3 (human) mapping to 1p13.3; Gnai3 (mouse) mapping to 3 F2.3.

SOURCE

$G_{\alpha\ i\text{-}3}$ is expressed in *E. coli* as a 42 kDa protein mapping at amino acids 1-377 of $G_{\alpha\ i\text{-}3}$ of rat origin.

RESEARCH USE

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

PRODUCT

$G_{\alpha\ i\text{-}3}$ is purified from bacterial lysates (> 98%) by column chromatography; supplied as 1.0 µg in 0.1 ml SDS-PAGE loading buffer.

APPLICATIONS

$G_{\alpha\ i\text{-}3}$ is suitable as a Western blotting control for sc-262 and sc-365422.

Molecular Weight of $G_{\alpha\ i\text{-}3}$: 45 kDa.

SELECT PRODUCT CITATIONS

1. Piliponsky, A.M., Gleich, G.J., Nagler, A., Bar, I. and Levi-Schaffer, F. 2003. Non-IgE-dependent activation of human lung- and cord blood-derived mast cells is induced by eosinophil major basic protein and modulated by the membrane form of stem cell factor. Blood 101: 1898-1904.
2. Fitzsimons, C.P., Gompels, U.A., Verzijl, D., Vischer, H.F., Mattick, C., Leurs, R. and Smit, M.J. 2006. Chemokine-directed trafficking of receptor stimulus to different G proteins: selective inducible and constitutive signaling by human herpesvirus 6-encoded chemokine receptor U51. Mol. Pharmacol. 69: 888-898.
3. O-Uchi, J., Sasaki, H., Morimoto, S., Kusakari, Y., Shinji, H., Obata, T., Hongo, K., Komukai, K. and Kurihara, S. 2008. Interaction of α1-adrenoceptor subtypes with different G proteins induces opposite effects on cardiac L-type Ca^{2+} channel. Circ. Res. 102: 1378-1388.
4. El-Haroun, H., Clarke, D.L., Deacon, K., Bradbury, D., Clayton, A., Sutcliffe, A. and Knox, A.J. 2008. IL-1β, BK, and TGF-β1 attenuate PGI2-mediated cAMP formation in human pulmonary artery smooth muscle cells by multiple mechanisms involving p38 MAP kinase and PKA. Am. J. Physiol. Lung Cell. Mol. Physiol. 294: L553-L562.

STORAGE

Store at -20° C. 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.