

# G<sub>αq</sub>: sc-4226 WB

## 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. adenylyl cyclase), which act to generate one or more intracellular messengers, are less numerous. In mammals, G protein  $\alpha$ ,  $\beta$  and  $\gamma$  polypeptides are encoded by at least 16, 4 and 7 genes, respectively. Most interest in G proteins has been focused on their  $\alpha$  subunits, since these proteins bind and hydrolyze GTP and most obviously regulate the activity of the best studied effectors. Four distinct classes of G<sub>α</sub> subunits have been identified; these include G<sub>s</sub>, G<sub>i</sub>, G<sub>q</sub> and G<sub>12/13</sub>. The G<sub>i</sub> class comprises all the known  $\alpha$  subunits that are susceptible to pertussis toxin modifications, including G<sub>αi-1</sub>, G<sub>αi-2</sub>, G<sub>αi-3</sub>, G<sub>αo</sub>, G<sub>αt1</sub>, G<sub>αt2</sub>, G<sub>αz</sub> and G<sub>αgust</sub>. Of these, the three G<sub>αi</sub> subtypes function to open atrial potassium channels.

## REFERENCES

1. Jones, D.T., Masters, S.B., Bourne, H.R. and Reed, R.R. 1990. Biochemical characterization of three stimulatory GTP-binding proteins. The large and small forms of G<sub>s</sub> and the olfactory-specific G-protein, G<sub>olf</sub>. J. Biol. Chem. 265: 2671-2676.
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  $\gamma$  subunits, including a new form of the  $\gamma$  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  $\beta$  subunits of heterotrimeric GTP-binding proteins: characterization of a novel  $\beta$ -subunit cDNA. Biochem. Biophys. Res. Commun. 183: 350-356.
6. Conklin, B.R. and Bourne, H.R. 1993. Structural elements of G<sub>α</sub> subunits that interact with G<sub>βγ</sub> 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<sub>αi-2</sub> protein expressions through the ubiquitin-proteasome proteolysis pathway in rat adipocytes. Biochem. Biophys. Res. Commun. 323: 1109-1115.

## CHROMOSOMAL LOCATION

Genetic locus: GNAQ (human) mapping to 9q21.2; Gnaq (mouse) mapping to 19 A.

## SOURCE

G<sub>αq</sub> is expressed in *E. coli* as a 42 kDa protein mapping at amino acids 1-382 of G<sub>αq</sub> of rat origin.

## RESEARCH USE

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

## PRODUCT

G<sub>αq</sub> is purified from bacterial lysates (> 98%) by column chromatography; supplied as 1.0 µg in 0.1 ml SDS-PAGE loading buffer.

## APPLICATIONS

G<sub>αq</sub> is suitable as a Western blotting control for sc-392 and sc-393.

Molecular Weight of G<sub>αq</sub>: 45 kDa.

## SELECT PRODUCT CITATIONS

1. 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.
2. O-Uchi, J., Sasaki, H., Morimoto, S., Kusakari, Y., Shinji, H., Obata, T., Hongo, K., Komukai, K. and Kurihara, S. 2008. Interaction of  $\alpha_1$ -adrenoceptor subtypes with different G proteins induces opposite effects on cardiac L-type Ca<sup>2+</sup> channel. Circ. Res. 102: 1378-1388.

## 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](http://www.scbt.com) for detailed protocols and support products.