SANTA CRUZ BIOTECHNOLOGY, INC.

# $G_{\alpha\ i\text{-}1}$ (SPM397): sc-56536

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), whereas the effectors (i.e. adenyl cyclase), which act to generate one or more intracellular messengers, are less numerous. In mammals, G protein $\alpha$, $\beta$ and $\gamma$ subunits are encoded by at least 16, 4 and 7 different genes, respectively. The $\alpha$ subunits bind to and hydrolyze GTP. G protein complexes expressed in different tissues contain distinct $\alpha$, $\beta$ and $\gamma$ subunits. Preferential associations between members of subunit families increase G protein functional diversity. 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 $G_\alpha$ 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 $\alpha$ 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.

## CHROMOSOMAL LOCATION

Genetic locus: GNAI1 (human) mapping to 7q21.11; Gnai1 (mouse) mapping to 5 A3.

## SOURCE

$G_{\alpha\ i\text{-}1}$ (SPM397) is a mouse monoclonal antibody raised against partially purified $G_{\alpha\ i\text{-}1}$ of rat brain origin.

## PRODUCT

Each vial contains 200 µg $IgG_{2b}$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

$G_{\alpha\ i\text{-}1}$ (SPM397) is recommended for detection of $G_{\alpha\ i\text{-}1}$ of mouse, rat, human and bovine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)]; non cross-reactive with transducin, $G_{\alpha\ 0}$, $G_{\alpha\ i\text{-}2}$, $G_{\alpha\ i\text{-}3}$ or $G_{\alpha\ s}$.

Suitable for use as control antibody for $G_{\alpha\ i\text{-}1}$ siRNA (h): sc-105382, $G_{\alpha\ i\text{-}1}$ siRNA (m): sc-41751, $G_{\alpha\ i\text{-}1}$ shRNA Plasmid (h): sc-105382-SH, $G_{\alpha\ i\text{-}1}$ shRNA Plasmid (m): sc-41751-SH, $G_{\alpha\ i\text{-}1}$ shRNA (h) Lentiviral Particles: sc-105382-V and $G_{\alpha\ i\text{-}1}$ shRNA (m) Lentiviral Particles: sc-41751-V.

Molecular Weight of $G_{\alpha\ i\text{-}1}$: 41 kDa.

Positive Controls: SK-N-SH cell lysate: sc-2410, rat brain extract: sc-2392 or mouse brain extract: sc-2253.

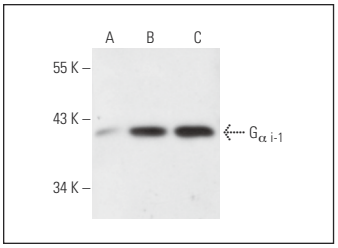
## STORAGE

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

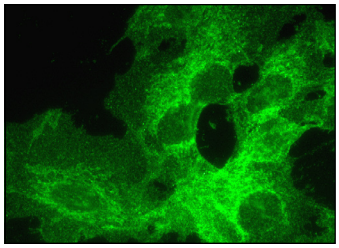
## RESEARCH USE

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

## DATA




$G_{\alpha\ i\text{-}1}$ (SPM397): sc-56536. Western blot analysis of $G_{\alpha\ i\text{-}1}$ expression in SK-N-SH whole cell lysate (**A**) and rat brain (**B**) and mouse brain (**C**) tissue extracts.



$G_{\alpha\ i\text{-}1}$ (SPM397): sc-56536. Immunofluorescence staining of formalin-fixed Hep G2 cells showing membrane and cytoplasmic localization.

## SELECT PRODUCT CITATIONS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2. Demir, H., et al. 2014. Mutation analysis of inhibitory guanine nucleotide binding protein α (GNAI) loci in young and familial pituitary adenomas. PLoS ONE 9: e109897.
3. Matsumura, S., et al. 2016. Interphase adhesion geometry is transmitted to an internal regulator for spindle orientation via caveolin-1. Nat. Commun. 7: ncomms11858.
4. Eldeeb, K., et al. 2017. Mouse neuroblastoma $CB_1$ cannabinoid receptor-stimulated [$^{35}$S]GTPγS binding: total and antibody-targeted $G_\alpha$ protein-specific scintillation proximity assays. Methods Enzymol. 593: 1-21.
5. Okumura, M., et al. 2018. Dynein-Dynactin-NuMA clusters generate cortical spindle-pulling forces as a multi-arm ensemble. Elife 7: e36559.
6. García-Bea, A., et al. 2019. Serotonin 5-$HT_{2A}$ receptor expression and functionality in postmortem frontal cortex of subjects with schizophrenia: selective biased agonism via $G_{\alpha\ i\text{-}1}$-proteins. Eur. Neuropsychopharmacol. 29: 1453-1463.
7. Costas-Insua, C., et al. 2021. Identification of BiP as a $CB_1$ receptor-interacting protein that fine-tunes cannabinoid signaling in the mouse brain. J. Neurosci. 41: 7924-7941.
8. Fankhaenel, M., et al. 2023. Annexin A1 is a polarity cue that directs mitotic spindle orientation during mammalian epithelial morphogenesis. Nat. Commun. 14: 151.
9. Muneta-Arrate, I., et al. 2024. Ligand bias and inverse agonism on 5-HT2A receptor-mediated modulation of G protein activity in post-mortem human brain. Br. J. Pharmacol. E-published.


CONJUGATES

See **$G_{\alpha\ i\text{-}1}$ (R4): sc-13533** for $G_{\alpha\ i\text{-}1}$ antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.