SANTA CRUZ BIOTECHNOLOGY, INC.

GCS-β-1 (G-3): sc-514183

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Guanylate cyclases belong to the adenylyl cyclase class-4/guanylyl cyclase family. There are two forms of guanylate cyclase. The soluble form, known as GCS or sGC, act as receptors for nitric oxide. The membrane-bound receptor form, known as GC, are peptide hormone receptors. GCS is a cGMP-synthesizing enzyme, which is the major receptor for the neurotransmitter nitric oxide (NO). It plays a crucial role in smooth muscle contractility, platelet reactivity and neurotransmission. GCS is a heme containing heterodimer, consisting of one α subunit and one β subunit. The heme moeity mediates NO activation, and this heme group also binds carbon monoxide, which weakly stimulates the enzyme. Both NO and CO stimulation are enhanced by the allosteric activator 3-(5'-hydroxymethyl-2'furyl)-benzyl-indazole, YC-1. YC-1 can also stimulate GCS in a NO-independent manner. Both α and β subunits are required for cGMP generation, and at least two isoforms exist for each subunit. Heterodimers consisting of α-1/β-1 and α-2/β-1 have been identified, and both display similar enzymatic activity. The distribution of the β-2 subunit seems to be much more restricted than the β-1 subunit, with predominant expression in kidney and liver.

REFERENCES

1. Yuen, P., et al. 1990. A new form of guanylyl cyclase is preferentially expressed in rat kidney. Biochemistry 29: 10872-10878.
2. Wedel, B., et al. 1995. Funcational domains of soluble guanylyl cyclase. J. Biol. Chem. 270: 24871-24875.
3. Bellamy, T., et al. 2000. Rapid desensitization of the nitric oxide receptor, soluble guanylyl cyclase, underlies diversity of cellular cGMP responses. Proc. Natl. Acad. Sci. USA 97: 2928-2933.

CHROMOSOMAL LOCATION

Genetic locus: GUCY1B3 (human) mapping to 4q32.1; Gucy1b3 (mouse) mapping to 3 E3.

SOURCE

GCS-β-1 (G-3) is a mouse monoclonal antibody raised against amino acids 541-619 of GCS-β-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GCS-β-1 (G-3) is available conjugated to agarose (sc-514183 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-514183 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514183 PE), fluorescein (sc-514183 FITC), Alexa Fluor® 488 (sc-514183 AF488), Alexa Fluor® 546 (sc-514183 AF546), Alexa Fluor® 594 (sc-514183 AF594) or Alexa Fluor® 647 (sc-514183 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514183 AF680) or Alexa Fluor® 790 (sc-514183 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

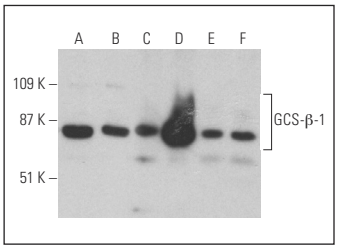
GCS-β-1 (G-3) is recommended for detection of GCS-β-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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 GCS-β-1 siRNA (h): sc-36486, GCS-β-1 siRNA (m): sc-36487, GCS-β-1 shRNA Plasmid (h): sc-36486-SH, GCS-β-1 shRNA Plasmid (m): sc-36487-SH, GCS-β-1 shRNA (h) Lentiviral Particles: sc-36486-V and GCS-β-1 shRNA (m) Lentiviral Particles: sc-36487-V.

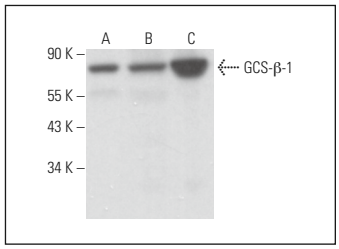
Molecular Weight of GCS-β-1: 65 kDa.

Positive Controls: mouse brain extract: sc-2253, Neuro-2A whole cell lysate: sc-364185 or IMR-32 cell lysate: sc-2409.

DATA



GCS-β-1 (G-3) HRP: sc-514183 HRP. Direct western blot analysis of GCS-β-1 expression in Neuro-2A (**A**) and IMR-32 (**B**) whole cell lysates and mouse platelet (**C**), human platelet (**D**), human brain (**E**) and mouse brain (**F**) tissue extracts.



GCS-β-1 (G-3): sc-514183. Western blot analysis of GCS-β-1 expression in human brain (**A**), mouse brain (**B**) and human fetal lung (**C**) tissue extracts.

SELECT PRODUCT CITATIONS

1. Jacoby, J., et al. 2018. A self-regulating gap junction network of amacrine cells controls nitric oxide release in the retina. Neuron 100: 1149-1162.e5.
2. Cao, X.J., et al. 2019. Nitric oxide-mediated plasticity of interconnections between T-stellate cells of the ventral cochlear nucleus generate positive feedback and constitute a central gain control in the auditory system. J. Neurosci. 39: 6095-6107.
3. Beñaldo, F.A., et al. 2022. Cinaciguat (BAY-582667) modifies cardiopulmonary and systemic circulation in chronically hypoxic and pulmonary hypertensive neonatal lambs in the alto andino. Front. Physiol. 13: 864010.
4. Guerra-Ojeda, S., et al. 2022. Cerium dioxide nanoparticles modulate antioxidant defences and change vascular response in the human saphenous vein. Free Radic. Biol. Med. 193: 694-701.

STORAGE

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