

# GCS- $\beta$ -1 (H-79): sc-20955

## 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  $\alpha$  subunit and one  $\beta$  subunit. The heme moiety 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  $\alpha$  and  $\beta$  subunits are required for cGMP generation, and at least two isoforms exist for each subunit. Heterodimers consisting of  $\alpha$ -1/ $\beta$ -1 and  $\alpha$ -2/ $\beta$ -1 have been identified, and both display similar enzymatic activity. The distribution of the  $\beta$ -2 subunit seems to be much more restricted than the  $\beta$ -1 subunit, with predominant expression in kidney and liver.

## CHROMOSOMAL LOCATION

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

## SOURCE

GCS- $\beta$ -1 (H-79) is a rabbit polyclonal antibody raised against amino acids 541-619 of GCS- $\beta$ -1 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

GCS- $\beta$ -1 (H-79) is recommended for detection of GCS- $\beta$ -1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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).

GCS- $\beta$ -1 (H-79) is also recommended for detection of GCS- $\beta$ -1 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for GCS- $\beta$ -1 siRNA (h): sc-36486, GCS- $\beta$ -1 siRNA (m): sc-36487, GCS- $\beta$ -1 shRNA Plasmid (h): sc-36486-SH, GCS- $\beta$ -1 shRNA Plasmid (m): sc-36487-SH, GCS- $\beta$ -1 shRNA (h) Lentiviral Particles: sc-36486-V and GCS- $\beta$ -1 shRNA (m) Lentiviral Particles: sc-36487-V.

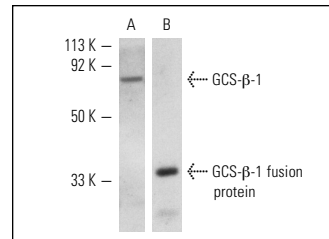
Molecular Weight of GCS- $\beta$ -1: 65 kDa.

Positive Controls: mouse placenta extract: sc-364247 or human lung extract: sc-363767.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## DATA



GCS- $\beta$ -1 (H-79): sc-20955. Western blot analysis of GCS- $\beta$ -1 expression in mouse placenta extract (A) and human recombinant GCS- $\beta$ -1 fusion protein (B).

## SELECT PRODUCT CITATIONS

- Velázquez, E., et al. 2012. Glucagon-like peptide-2 (GLP-2) modulates the cGMP signalling pathway by regulating the expression of the soluble guanylyl cyclase receptor subunits in cultured rat astrocytes. *Mol. Neurobiol.* 46: 242-250.
- Schinner, E., et al. 2013. The cyclic GMP-dependent protein kinase I $\alpha$  suppresses kidney fibrosis. *Kidney Int.* 84: 1198-1206.

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


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Try **GCS- $\beta$ -1 (G-3): sc-514183**, our highly recommended monoclonal alternative to GCS- $\beta$ -1 (H-79).