

# GCS- $\beta$ -1 (S-14): sc-21309

## BACKGROUND

Guanylate cyclases belong to the adenylyl cyclase class-4/guanylyl cyclase family. There are two forms of guanylate cyclase, a soluble form (GCS or sGC), which act as receptors for nitric oxide and a membrane-bound receptor form (GC), which 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.

## 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. Functional 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.
4. Lee, Y., et al. 2000. Human recombinant soluble guanylyl cyclase: expression, purification, and regulation. *Proc. Nat. Acad. Sci. USA* 97: 10763-10768.

## CHROMOSOMAL LOCATION

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

## SOURCE

GCS- $\beta$ -1 (S-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus 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.

Blocking peptide available for competition studies, sc-21309 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## STORAGE

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

## APPLICATIONS

GCS- $\beta$ -1 (S-14) 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).

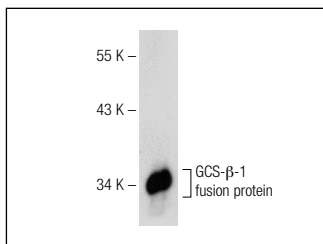
GCS- $\beta$ -1 (S-14) is also recommended for detection of GCS- $\beta$ -1 in additional species, including equine, canine, bovine, porcine and avian.

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-363772 or human lung extract: 363767.

## DATA



GCS- $\beta$ -1 (S-14): sc-21309. Western blot analysis of human recombinant GCS- $\beta$ -1 fusion protein.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.



Try **GCS- $\beta$ -1 (G-3): sc-514183**, our highly recommended monoclonal alternative to GCS- $\beta$ -1 (S-14).