

γ -GCSc (L-20): sc-15087



The Power to Question

BACKGROUND

The GLCLC gene consists of 16 exons and encodes the 636 amino acid protein γ -GCSc (γ -glutamylcysteine synthetase heavy subunit), also designated γ -L-glutamate-L-cysteine ligase catalytic subunit (GLCLC). γ -GCSc is expressed in hemocytes, brain, liver and kidney. γ -GCSc associates with a regulatory or modifier subunit, γ -GCScM (γ -glutamylcysteine synthetase light subunit), to form a heterodimer, γ -GCS. γ -GCS is the first enzyme involved and the rate determining step in glutathione biosynthesis. Oxidants, cadmium and methyl mercury upregulate the transcription of γ -GCS. H_2O_2 regulation depends on the Yap1 protein and the presence of glutamate, glutamine and lysine. Cadmium regulates transcription through proteins Met-4, Met-31 and Met-32. Cbf1, a DNA binding protein, inhibits transcription of γ -GCS. Chemopreventive compounds cause increased levels of γ -GCSc in kidney tissues, which may protect against chemically induced carcinogenesis. A His 370 Leu amino acid change in γ -GCSc causes deficiencies in activity which are responsible for hemolytic anemia and low red blood cell glutathione levels.

REFERENCES

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- Walsh, A.C., et al. 1996. Genetic mapping of GLCLC, the human gene encoding the catalytic subunit of γ -glutamyl-cysteine synthetase, to chromosome band 6p12 and characterization of a polymorphic trinucleotide repeat within its 5-prime untranslated region. *Cytogenet. Cell Genet.* 75: 14-16.
- Stephen, D.W., et al. 1997. Amino acid-dependent regulation of the *Saccharomyces cerevisiae* GSH1 gene by hydrogen peroxide. *Mol. Microbiol.* 23: 203-210.
- Thompson, S.A., et al. 1999. Induction of glutamate-cysteine ligase (γ -glutamylcysteine synthetase) in the brains of adult female mice subchronically exposed to methylmercury. *Toxicol. Lett.* 110: 1-9.
- Beutler, E., et al. 1999. The molecular basis of a case of γ -glutamylcysteine synthetase deficiency. *Blood* 94:2890-2894.
- Gipp, J.J., et al. 2000. Structure of the human glutamate-L-cysteine ligase catalytic (GLCLC) subunit gene. *Cytogenet. Cell Genet.* 88: 130-132.
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CHROMOSOMAL LOCATION

Genetic locus: GLCLC (human) mapping to 6p12.1; Gclc (mouse) mapping to 9 E1.

SOURCE

γ -GCSc (L-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of γ -GCSc of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-15087 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

γ -GCSc (L-20) is recommended for detection of γ -GCSc of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

γ -GCSc (L-20) is also recommended for detection of γ -GCSc in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for γ -GCSc siRNA (h): sc-41978, γ -GCSc siRNA (m): sc-41979, γ -GCSc shRNA Plasmid (h): sc-41978-SH, γ -GCSc shRNA Plasmid (m): sc-41979-SH, γ -GCSc shRNA (h) Lentiviral Particles: sc-41978-V and γ -GCSc shRNA (m) Lentiviral Particles: sc-41979-V.

Molecular Weight of γ -GCSc: 73 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, A549 cell lysate: sc-2413 or A-431 whole cell lysate: sc-2201.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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.



Try γ -GCSc (H-5): sc-390811 or γ -GCSc (F-9): sc-166356, our highly recommended monoclonal alternatives to γ -GCSc (L-20).