

γ -GCSm (F-8): sc-166603



The Power to Question

BACKGROUND

γ -glutamylcysteine synthetase (γ -GCS) is the rate limiting enzyme for glutathione (L- γ -glutamyl-L-cysteinylglycine, GSH) synthesis. GSH is ubiquitous in mammalian cells as a vital intra- and extracellular protective antioxidant. γ -GCS is a heterodimer of a heavy catalytic subunit and a light regulatory subunit that is responsive to inflammation, phenolic antioxidants, heat shock, oxidants and cytokines. The human γ -GCS gene encoding the 367 amino acid catalytic subunit maps to chromosome 6p12. The human γ -GCS gene encoding the regulatory subunit maps to chromosome 1p22.1. The two subunits of γ -GCS form a heterodimeric zinc metalloprotein that gains activity through formation of a reversible disulfide bond.

REFERENCES

- Sierra-Rivera, E., et al. 1995. Assignment of the gene (GLCLC) that encodes the heavy subunit of γ -glutamylcysteine synthetase to human chromosome 6. *Cytogenet. Cell Genet.* 70: 278-279.
- Anderson, M.E. 1998. Glutathione: an overview of biosynthesis and modulation. *Chem. Biol. Interact.* 111-112: 1-14.
- Kondo, T., et al. 1999. Regulation of γ -glutamylcysteine synthetase expression in response to oxidative stress. *Free Radic. Res.* 31: 325-334.
- Rahman, I. 1999. Inflammation and the regulation of glutathione level in lung epithelial cells. *Antioxid. Redox Signal.* 1: 425-447.
- Rahman, I. and MacNee, W. 2000. Regulation of redox glutathione levels and gene transcription in lung inflammation: therapeutic approaches. *Free Radic. Biol. Med.* 28: 1405-1420.
- Soltaninassab, S.R., et al. 2000. Multi-faceted regulation of γ -glutamylcysteine synthetase. *J. Cell. Physiol.* 182: 163-170.
- Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 606857. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: GCLM (human) mapping to 1p22.1; Gclm (mouse) mapping to 3 G1.

SOURCE

γ -GCSm (F-8) is a mouse monoclonal antibody raised against amino acids 1-274 representing full length γ -GCSm of human origin.

PRODUCT

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

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.

APPLICATIONS

γ -GCSm (F-8) is recommended for detection of γ -GCSm of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ 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).

Suitable for use as control antibody for γ -GCSm siRNA (h): sc-40602, γ -GCSm siRNA (m): sc-40603, γ -GCSm shRNA Plasmid (h): sc-40602-SH, γ -GCSm shRNA Plasmid (m): sc-40603-SH, γ -GCSm shRNA (h) Lentiviral Particles: sc-40602-V and γ -GCSm shRNA (m) Lentiviral Particles: sc-40603-V.

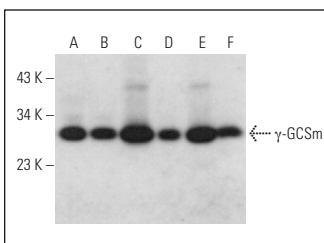
Molecular Weight of γ -GCSm: 31 kDa.

Positive Controls: A549 cell lysate: sc-2413, K-562 whole cell lysate: sc-2203 or c4 whole cell lysate: sc-364186.

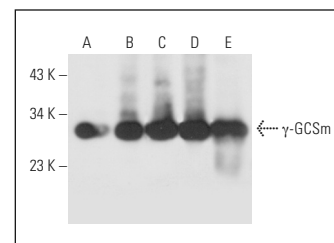
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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 m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



γ -GCSm (F-8): sc-166603. Western blot analysis of γ -GCSm expression in MCF7 (A), HeLa (B), BYDP (C), Sol8 (D), c4 (E) and L6 (F) whole cell lysates.



γ -GCSm (F-8): sc-166603. Western blot analysis of γ -GCSm expression in K-562 (A), A549 (B) and c4 (C) whole cell lysates and rat liver (D) and mouse liver (E) tissue extracts.

SELECT PRODUCT CITATIONS

- Akaboshi, T. and Yamanishi, R. 2014. Certain carotenoids enhance the intracellular glutathione level in a murine cultured macrophage cell line by inducing glutamate-cysteine-ligase. *Mol. Nutr. Food Res.* 58: 1291-1300.
- Mukai, Y. and Yamanishi, R. 2018. Retinol but not retinoic acid can enhance the glutathione level, in a manner similar to β -carotene, in a murine cultured macrophage cell line. *Food Sci. Nutr.* 6: 1650-1656.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.