SANTA CRUZ BIOTECHNOLOGY, INC.

GSS (H-7): sc-166882

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

GSS (glutathione synthetase) is a 474 amino acid protein encoded by the gene located at human chromosome 20q11.22. GSS consists of three loops projecting from an antiparallel β-sheet, a parallel β-sheet and a lid of anti-parallel sheets, which provide access to the ATP-binding site. Although Southern blot and gene analysis suggest that GSS may be the only member of a unique family, the crystal structure indicates that GSS belongs to the ATP-GRASP superfamily. GSS is expressed in hemocytes and nucleated cells, including the brain. GSS occurs as a homodimer. There are two steps in the production of glutathione, begining with γ-GCS and ending with GSS. In an ATP-dependent reaction, GSS produces glutathione from γ-glutamylcysteine and glycine precursors. Partial hepatectomy, diethyl maleate, buthionine sulfoximine, tert-butylhaydroquinone and thioacetamide increase the expression of GSS, which causes an increase in glutathione levels. An inherited autosomal recessive disorder, 5-oxoprolinuria (pyroglutamic aciduria), is caused by GSS deficiencies, which leads to central nervous system damage, hemolytic anemia, metabolic acidosis and urinary excretion of 5-oxoproline. A missense mutation in the gene encoding GSS leads to a GSS deficiency restricted to erythrocytes, which causes only hemolytic anemia.

CHROMOSOMAL LOCATION

Genetic locus: GSS (human) mapping to 20q11.22; Gss (mouse) mapping to 2 H1.

SOURCE

GSS (H-7) is a mouse monoclonal antibody raised against amino acids 81-380 mapping within an internal region of GSS 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.

GSS (H-7) is available conjugated to agarose (sc-166882 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166882 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166882 PE), fluorescein (sc-166882 FITC), Alexa Fluor® 488 (sc-166882 AF488), Alexa Fluor® 546 (sc-166882 AF546), Alexa Fluor® 594 (sc-166882 AF594) or Alexa Fluor® 647 (sc-166882 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166882 AF680) or Alexa Fluor® 790 (sc-166882 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

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 for detailed protocols and support products.

APPLICATIONS

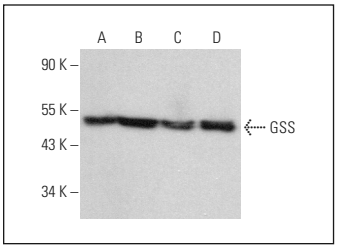
GSS (H-7) is recommended for detection of GSS of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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 GSS siRNA (h): sc-41980, GSS siRNA (m): sc-41981, GSS shRNA Plasmid (h): sc-41980-SH, GSS shRNA Plasmid (m): sc-41981-SH, GSS shRNA (h) Lentiviral Particles: sc-41980-V and GSS shRNA (m) Lentiviral Particles: sc-41981-V.

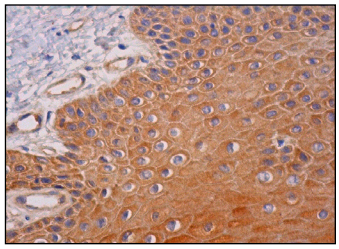
Molecular Weight of GSS: 52 kDa.

Positive Controls: COLO 205 whole cell lysate: sc-364177, HeLa whole cell lysate: sc-2200 or NTERA-2 cl.D1 whole cell lysate: sc-364181.

DATA



GSS (H-7): sc-166882. Western blot analysis of GSS expression in HeLa (**A**), COLO 205 (**B**), NTERA-2 cl.D1 (**C**) and OVCAR-3 (**D**) whole cell lysates.



GSS (H-7): sc-166882. Immunoperoxidase staining of formalin fixed, paraffin-embedded human uterine and cervix tissue showing cytoplasmic staining of squamous epithelial cells.

SELECT PRODUCT CITATIONS

1. Quintana Cabrera, R., et al. 2012. γ-glutamylcysteine detoxifies reactive oxygen species by acting as glutathione peroxidase-1 cofactor. Nat. Commun. 3: 718.
2. Cao, J., et al. 2020. DJ-1 suppresses ferroptosis through preserving the activity of S-adenosyl homocysteine hydrolase. Nat. Commun. 11: 1251.
3. Quintana-Cabrera, R., et al. 2021. Opa1 relies on cristae preservation and ATP synthase to curtail reactive oxygen species accumulation in mitochondria. Redox Biol. 41: 101944.
4. Zhu, Z., et al. 2022. Cysteine improves boar sperm quality via glutathione biosynthesis during the liquid storage. Anim. Biosci. 35: 166-176.
5. Peng, Y., et al. 2022. Corosolic acid sensitizes ferroptosis by upregulating HERPUD1 in liver cancer cells. Cell Death Discov. 8: 376.
6. Dong, X.Q., et al. 2023. Glutathione metabolism rewiring protects renal tubule cells against cisplatin-induced apoptosis and ferroptosis. Redox Rep. 28: 2152607.

RESEARCH USE

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