SANTA CRUZ BIOTECHNOLOGY, INC.

Grx1 (3C11): sc-293250

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glutaredoxin (Grx) and a relative, thioredoxin, catalyze general thiol-disulfide oxidoreductions and act as hydrogen donors for ribonucleotide reductase, an enzyme essential for DNA synthesis. Proteins which catalyze thiol-disulfide exchange reactions are required for electron and proton transport to essential enzymes like ribonucleotide reductase, for the formation of disulfide bonds during protein folding, and for general regulation of protein function by thiol redox control. These proteins also play a role in cellular defense against oxidative stress. The thioredoxin superfamily includes a number of proteins with the same basic folding and structure as thioredoxin and glutaredoxin, with the active site at the C-terminal end of a β-strand followed by an α-helix. Glutaredoxin (Grx) operates in thiol-disulfide reactions via two vicinal (CXYC) active site cysteine residues, which either form a disulfide (oxidized form) or a dithiol (reduced form). Mammalian cells contain at least two dithiol glutaredoxins: Grx1, the cytoplasmic form; and Grx2, which has mitochondrial and nuclear isoforms. Nuclear Grx2, unlike Grx1, is a substrate for thioredoxin reductase and has a higher affinity for S-glutathionylated proteins.

REFERENCES

1. Song, J.J., et al. 2003. Effect of glucose concentration on activation of the ASK1-SEK1-JNK1 signal transduction pathway. J. Cell. Biochem. 89: 653-662.
2. Trotter, E.W., et al. 2003. Non-reciprocal regulation of the redox state of the glutathione-glutaredoxin and thioredoxin systems. EMBO Rep. 4: 184-188.

CHROMOSOMAL LOCATION

Genetic locus: GLRX (human) mapping to 5q15.

SOURCE

Grx1 (3C11) is a mouse monoclonal antibody raised against amino acids 1-106 of Grx1 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Grx1 (3C11) is recommended for detection of Grx1 of human origin by Western Blotting (starting dilution 1:200, 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 Grx1 siRNA (h): sc-72089, Grx1 shRNA Plasmid (h): sc-72089-SH and Grx1 shRNA (h) Lentiviral Particles: sc-72089-V.

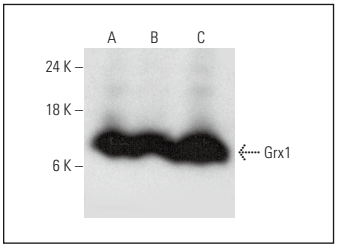
Molecular Weight of Grx1: 12 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, Hep G2 cell lysate: sc-2227 or U-937 cell lysate: sc-2239.

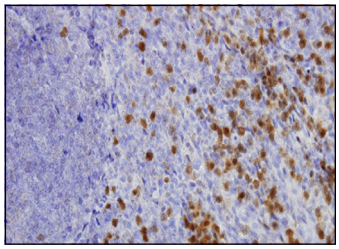
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



Grx1 (3C11): sc-293250. Western blot analysis of Grx1 expression in Jurkat (**A**), U-937 (**B**) and Hep G2 (**C**) whole cell lysates.



Grx1 (3C11): sc-293250. Immunoperoxidase staining of formalin fixed, paraffin-embedded human tonsil tissue showing cytoplasmic staining.

SELECT PRODUCT CITATIONS

1. Lou, M., et al. 2017. Physical interaction between human ribonucleotide reductase large subunit and thioredoxin increases colorectal cancer malignancy. J. Biol. Chem. 292: 9136-9149.
2. Moreno Leon, L., et al. 2019. The nuclear hypoxia-regulated NLUCAT1 long non-coding RNA contributes to an aggressive phenotype in lung adenocarcinoma through regulation of oxidative stress. Oncogene 38: 7146-7165.

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.

PROTOCOLS

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