



Grx1 (H-18): sc-27788

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 (CX₂C) 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.
3. Molina, M.M., et al. 2004. Nuclear monothiol glutaredoxins of *Saccharomyces cerevisiae* can function as mitochondrial glutaredoxins. *J. Biol. Chem.* 279: 51923-51930.
4. Ortenberg, R. et al. 2004. Interactions of glutaredoxins, ribonucleotide reductase, and components of the DNA replication system of *Escherichia coli*. *Proc. Natl. Acad. Sci. USA* 101: 7439-7444.
5. Johansson, C. et al. 2004. Human mitochondrial glutaredoxin reduces S-glutathionylated proteins with high affinity accepting electrons from either glutathione or thioredoxin reductase. *J. Biol. Chem.* 279: 7537-7543.
6. Park, J.B. et al. 2005. Cloning, sequencing and characterization of alternatively spliced glutaredoxin 1 cDNA and its genomic gene: chromosomal localization, mRNA stability, and origin of pseudogenes. *J. Biol. Chem.* 280: 10427-10434.

CHROMOSOMAL LOCATION

Genetic locus: GLRX (human) mapping to 5q14; Glrx (mouse) mapping to 13 C1.

SOURCE

Grx1 (H-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Glutaredoxin of human origin.

STORAGE

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

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-27788 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Grx1 (H-18) is recommended for detection of Grx1 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).

Suitable for use as control antibody for Grx1 siRNA (h): sc-72089.

Molecular Weight of Grx1: 12 kDa.

Positive Controls: human neutrophils or human cervical tissue.

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.

RESEARCH USE

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

PROTOCOLS

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