SANTA CRUZ BIOTECHNOLOGY, INC.

Trx (3A1): sc-58440

BACKGROUND

Thioredoxin (Trx) is a redox protein that is found in several species, such as bacteria, plants and mammals, and contains a conserved active site, consisting of Trp-Cys-Gly-Pro-Cys. Trx has several biological functions. It acts as a hydrogen donor for ribonucleotide reductase, which is critical for DNA synthesis, and modulates the DNA-binding activity of several transcription factors, including NFkB, AP-1, p53, TFIIIC and glucocorticoid receptor. Trx also stimulates cell growth, is an inhibitor of apoptosis and plays a role in the protection against oxidative stress. Drugs that inhibit Trx have antitumor activity, suggesting that Trx is involved in a variety of human diseases, including cancer. TrxR is a ubiquitously expressed flavoprotein that catalyzes the NADPH-dependent reduction of Trx as well as several other oxidized cellular components.

REFERENCES

1. Lunn, C.A. and Pigiet, V.P. 1982. Localization of thioredoxin from *Escherichia coli* in an osmotically sensitive compartment. J. Biol. Chem. 257: 11424-11430.
2. Lunn, C.A., et al. 1984. Amplification and purification of plasmid-encoded thioredoxin from *Escherichia coli* K12. J. Biol. Chem. 259: 10469-10474.
3. Holmgren, A. 1985. Thioredoxin. Annu. Rev. Biochem. 54: 237-271.
4. LaVallie, E.R., et al. 1993. A thioredoxin gene fusion expression system that circumvents inclusion body formation in the *E. coli* cytoplasm. Biotechnology 11: 187-913.
5. Tanaka, T., et al. 2000. Redox regulation by thioredoxin superfamily; protection against oxidative stress and aging. Free Radic. Res. 33: 851-855.
6. Arner, E.S. and Holmgren, A. 2000. Physiological functions of thioredoxin and thioredoxin reductase. Eur. J. Biochem. 267: 6102-6109.
7. Williams, C.H., et al. 2000. Thioredoxin reductase two modes of catalysis have evolved. Eur. J. Biochem. 267: 6110-6117.
8. Becker, K., et al. 2000. Thioredoxin reductase as a pathophysiological factor and drug target. Eur. J. Biochem. 267: 6118-6125.
9. Powis, G. and Montfort, W.R. 2001. Properties and biological activities of thioredoxins. Annu. Rev. Pharmacol. Toxicol. 41: 261-295.

CHROMOSOMAL LOCATION

Genetic locus: TXN (human) mapping to 9q31.3.

SOURCE

Trx (3A1) is a mouse monoclonal antibody raised against full length Trx of human origin.

PRODUCT

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

RESEARCH USE

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

APPLICATIONS

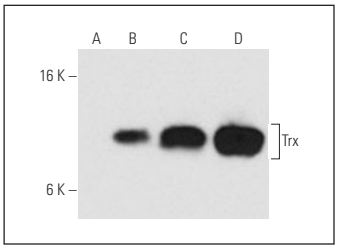
Trx (3A1) is recommended for detection of Trx of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (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 Trx siRNA (h): sc-106984, Trx shRNA Plasmid (h): sc-106984-SH and Trx shRNA (h) Lentiviral Particles: sc-106984-V.

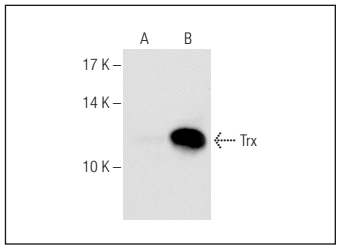
Molecular Weight of Trx: 12 kDa.

Positive Controls: THP-1 cell lysate: sc-2238, Trx (h): 293 Lysate: sc-110552 or BJAB whole cell lysate: sc-2207.

DATA



Trx (3A1): sc-58440. Western blot analysis of Trx expression in non-transfected 293: sc-110760 (**A**), human Trx transfected 293: sc-110552 (**B**), THP-1 (**C**) and AML-193 (**D**) whole cell lysates.



Trx (3A1): sc-58440. Western blot analysis of Trx expression in 293T (**A**) and BJAB (**B**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Fiskus, W., et al. 2008. Molecular and biologic characterization and drug sensitivity of pan-histone deacetylase inhibitor-resistant acute myeloid leukemia cells. Blood 112: 2896-2905.
2. Madrigal-Matute, J., et al. 2015. Thioredoxin-1/peroxiredoxin-1 as sensors of oxidative stress mediated by NADPH oxidase activity in atherosclerosis. Free. Radic. Biol. Med. 86: 352-361.
3. Chen, C.L., et al. 2015. Comparative tissue proteomics of microdissected specimens reveals novel candidate biomarkers of bladder cancer. Mol. Cell. Proteomics 14: 2466-2478.
4. Shytaj, I.L., et al. 2020. Alterations of redox and iron metabolism accompany the development of HIV latency. EMBO J. 39: e102209.

STORAGE

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