SANTA CRUZ BIOTECHNOLOGY, INC.

Trx (D-4): sc-271281

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 NFκB, 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.

CHROMOSOMAL LOCATION

Genetic locus: TXN (human) mapping to 9q31.3; Txn1 (mouse) mapping to 4 B3.

SOURCE

Trx (D-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1-34 at the N-terminus of Trx of human origin.

PRODUCT

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

Trx (D-4) is available conjugated to agarose (sc-271281 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271281 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271281 PE), fluorescein (sc-271281 FITC), Alexa Fluor® 488 (sc-271281 AF488), Alexa Fluor® 546 (sc-271281 AF546), Alexa Fluor® 594 (sc-271281 AF594) or Alexa Fluor® 647 (sc-271281 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271281 AF680) or Alexa Fluor® 790 (sc-271281 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-271281 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

Trx (D-4) is recommended for detection of Trx 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 Trx siRNA (h): sc-106984, Trx siRNA (m): sc-36749, Trx shRNA Plasmid (h): sc-106984-SH, Trx shRNA Plasmid (m): sc-36749-SH, Trx shRNA (h) Lentiviral Particles: sc-106984-V and Trx shRNA (m) Lentiviral Particles: sc-36749-V.

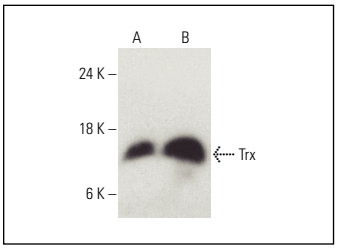
Molecular Weight of Trx: 12 kDa.

Positive Controls: A549 cell lysate: sc-2413 or HeLa whole cell lysate: sc-2200.

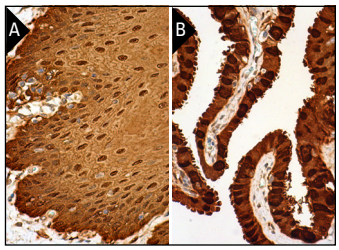
STORAGE

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

DATA



Trx (D-4) HRP: sc-271281 HRP. Direct western blot analysis of Trx expression in HeLa (**A**) and A549 (**B**) whole cell lysates.



Trx (D-4): sc-271281. Immunoperoxidase staining of formalin fixed, paraffin-embedded human esophagus tissue showing cytoplasmic and nuclear staining of squamous epithelial cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human fallopian tube tissue showing cytoplasmic and nuclear staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Banerjee, A., et al. 2017. Increased reactive oxygen species levels cause ER stress and cytotoxicity in andrographolide treated colon cancer cells. Oncotarget 8: 26142-26153.
2. Golubnitschaja, O., et al. 2018. Liquid biopsy and multiparametric analysis in management of liver malignancies: new concepts of the patient stratification and prognostic approach. EPMA J. 9: 271-285.
3. Kobayashi, M., et al. 2019. Identification of WWP1 as an obesity-associated E3 ubiquitin ligase with a protective role against oxidative stress in adipocytes. Biochem. Biophys. Res. Commun. 508: 117-122.
4. Pecorelli, A., et al. 2020. Alterations of mitochondrial bioenergetics, dynamics, and morphology support the theory of oxidative damage involvement in autism spectrum disorder. FASEB J. 34: 6521-6538.
5. Schiavone, M.L., et al. 2020. Mechanisms involved in the unbalanced redox homeostasis in osteoblastic cellular model of alkaptonuria. Arch. Biochem. Biophys. 690: 108416.
6. Seong, H.A., et al. 2021. Ablation of AMPK-related kinase MPK38/MELK leads to male-specific obesity in aged mature adult mice. Diabetes 70: 386-399.
7. Oberacker, T., et al. 2022. Enhanced oxidative DNA-damage in peritoneal dialysis patients via the TXNIP/TRX axis. Antioxidants 11: 1124.
8. Yu, X., et al. 2023. Thioredoxin 1 overexpression attenuated diabetes-induced endoplasmic reticulum stress in Müller cells via apoptosis signal-regulating kinase 1. J. Cell. Biochem. E-published.

RESEARCH USE

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