SANTA CRUZ BIOTECHNOLOGY, INC.

Trx-2 (F-10): sc-133201

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Thioredoxin (Trx) is a redox protein 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. Thioredoxin 2 (Trx-2) is a small redox protein that is localized to the mitochondria and is essential for cell viability, playing a crucial role in the scavenging of Ros in mitochondria and regulating the mitochondrial apoptosis signaling pathway. Trx reductases (TrxR1 and TrxR2) are ubiquitously expressed flavoproteins that catalyze the NADPH-dependent reduction of Trx as well as several other oxidized cellular components. Mammalian Trx reductases are a part of a selenium-containing pyridine nucleotide-disulphide oxidoreductase family, which has a conserved catalytic site of Cys-Val-Asn-Val-Gly-Cys. TrxR1 and TrxR2 are also involved in the prevention of oxidative stress. Inhibition of TrxR activity may provide for potential treatments of cancer, AIDS and other autoimmune diseases as well as bacterial infections and parasitic diseases.

CHROMOSOMAL LOCATION

Genetic locus: TXN2 (human) mapping to 22q12.3; Txn2 (mouse) mapping to 15 E1.

SOURCE

Trx-2 (F-10) is a mouse monoclonal antibody raised against amino acids 92-166 mapping at the C-terminus of Trx-2 of human origin.

PRODUCT

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

Trx-2 (F-10) is available conjugated to agarose (sc-133201 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-133201 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-133201 PE), fluorescein (sc-133201 FITC), Alexa Fluor® 488 (sc-133201 AF488), Alexa Fluor® 546 (sc-133201 AF546), Alexa Fluor® 594 (sc-133201 AF594) or Alexa Fluor® 647 (sc-133201 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-133201 AF680) or Alexa Fluor® 790 (sc-133201 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

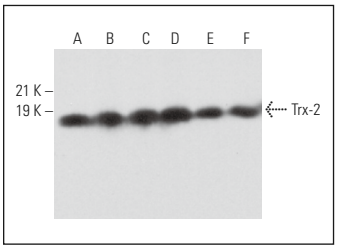
Trx-2 (F-10) is recommended for detection of Trx-2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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-2 siRNA (h): sc-44173, Trx-2 siRNA (m): sc-60084, Trx-2 shRNA Plasmid (h): sc-44173-SH, Trx-2 shRNA Plasmid (m): sc-60084-SH, Trx-2 shRNA (h) Lentiviral Particles: sc-44173-V and Trx-2 shRNA (m) Lentiviral Particles: sc-60084-V.

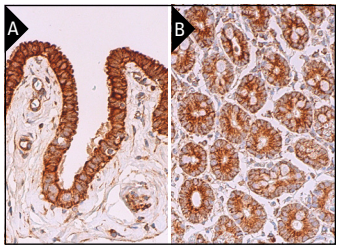
Molecular Weight of Trx-2: 18 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, K-562 whole cell lysate: sc-2203 or PC-12 cell lysate: sc-2250.

DATA



Trx-2 (F-10): sc-133201. Western blot analysis of Trx-2 expression in HeLa (**A**), K-562 (**B**), A-673 (**C**), Sol8 (**D**), L6 (**E**) and PC-12 (**F**) whole cell lysates.



Trx-2 (F-10): sc-133201. Immunoperoxidase staining of formalin fixed, paraffin-embedded human fallopian tube (**A**) and human duodenum (**B**) tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. 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.
2. Fu, Y., et al. 2022. Andrographolide suppresses pyroptosis in *Mycobacterium tuberculosis*-infected macrophages via the microRNA-155/Nrf2 axis. Oxid. Med. Cell. Longev. 2022: 1885066.
3. Blandino, G., et al. 2023. Clozapine suppresses NADPH oxidase activation, counteracts cytosolic H_2O_2, and triggers early onset mitochondrial dysfunction during adipogenesis of human liposarcoma SW872cells. Redox Biol. 67: 102915.
4. Smiriglia, A., et al. 2025. Estrogen-dependent activation of TRX2 reverses oxidative stress and metabolic dysfunction associated with steatotic disease. Cell Death Dis. 16: 57.

RESEARCH USE

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