

# TrxR2 (B-10): sc-365714

## 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 NF $\kappa$ B, 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.

## REFERENCES

- Soderberg, A., et al. 1998. Monoclonal antibodies to human thioredoxin reductase. *Biochem. Biophys. Res. Commun.* 249: 86-89.
- Lee, S.R., et al. 1999. Molecular cloning and characterization of a mitochondrial selenocysteine-containing thioredoxin reductase from rat liver. *J. Biol. Chem.* 274: 4722-4734.
- Gorlatov, S.N. and Stadtman, T.C. 1999. Human selenium-dependent thioredoxin reductase from HeLa cells: properties of forms with differing heparin affinities. *Arch. Biochem. Biophys.* 369: 133-142.

## CHROMOSOMAL LOCATION

Genetic locus: TXNRD2 (human) mapping to 22q11.21.

## SOURCE

TrxR2 (B-10) is a mouse monoclonal antibody raised against amino acids 258-312 mapping within an internal region of TrxR2 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TrxR2 (B-10) is available conjugated to agarose (sc-365714 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365714 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365714 PE), fluorescein (sc-365714 FITC), Alexa Fluor<sup>®</sup> 488 (sc-365714 AF488), Alexa Fluor<sup>®</sup> 546 (sc-365714 AF546), Alexa Fluor<sup>®</sup> 594 (sc-365714 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-365714 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-365714 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-365714 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

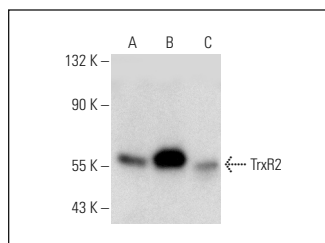
TrxR2 (B-10) is recommended for detection of TrxR2 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 TrxR2 siRNA (h): sc-45819, TrxR2 shRNA Plasmid (h): sc-45819-SH and TrxR2 shRNA (h) Lentiviral Particles: sc-45819-V.

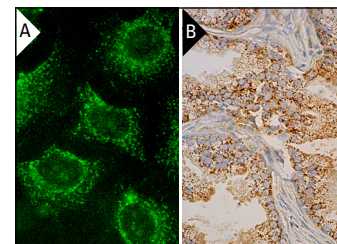
Molecular Weight of TrxR2: 56-57 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, K-562 whole cell lysate: sc-2203 or Hep G2 cell lysate: sc-2227.

## DATA



TrxR2 (B-10): sc-365714. Western blot analysis of TrxR2 expression in HeLa (A), K-562 (B) and Hep G2 (C) whole cell lysates.



TrxR2 (B-10): sc-365714. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human prostate tissue showing cytoplasmic staining of glandular cells (B).

## SELECT PRODUCT CITATIONS

- Branco, V., et al. 2014. Mitochondrial thioredoxin reductase inhibition, selenium status, and Nrf-2 activation are determinant factors modulating the toxicity of mercury compounds. *Free Radic. Biol. Med.* 73: 95-105.
- Branco, V., et al. 2017. Impaired cross-talk between the thioredoxin and glutathione systems is related to ASK-1 mediated apoptosis in neuronal cells exposed to mercury. *Redox Biol.* 13: 278-287.
- Gong, T., et al. 2021. Selenoprotein M promotes hypothalamic leptin signaling and thioredoxin antioxidant activity. *Antioxid. Redox Signal.* 35: 775-787.
- Karunanithi, S., et al. 2021. Thioredoxin reductase is a major regulator of metabolism in leukemia cells. *Oncogene* 40: 5236-5246.

## 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.

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