Human/Mouse/Rat Thioredoxin-1 Antibody

Monoclonal Mouse IgG_{2B} Clone # 763651

Catalog Number: MAB19701

DESCRIPTION

Species Reactivity	Human/Mouse/Rat
Specificity	Detects human Thioredoxin-1 in direct ELISAs. Detects human, mouse, and rat Thioredoxin-1 in Western blots.
Source	Monoclonal Mouse IgG_{2B} Clone # 763651
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	*E. coli*-derived recombinant human Thioredoxin-1 Val2-Val105 Accession # P10599
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 μm filtered solution in PBS.

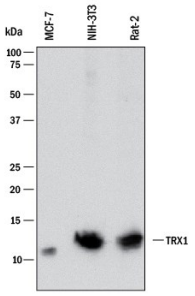
APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.*

	Recommended Concentration	Sample
Western Blot	2 µg/mL	See Below
Immunocytochemistry	8-25 µg/mL	See Below
Immunohistochemistry	5-25 µg/mL	See Below

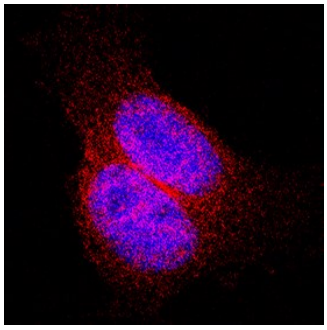
DATA

Western Blot



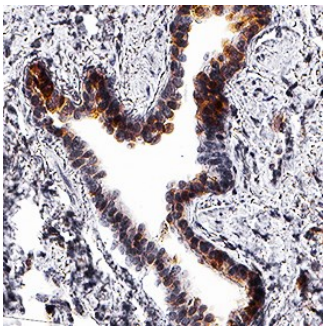
Detection of Human, Mouse, and Rat Thioredoxin-1 by Western Blot. Western blot shows lysates of MCF-7 human breast cancer cell line, NIH-3T3 mouse embryonic fibroblast cell line, and Rat-2 rat embryonic fibroblast cell line. PVDF membrane was probed with 2 µg/mL of Mouse Anti-Human/Mouse/Rat Thioredoxin-1 Monoclonal Antibody (Catalog # MAB19701) followed by HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF018). A specific band was detected for Thioredoxin-1 at approximately 12 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.

Immunocytochemistry



Thioredoxin-1 in HeLa Human Cell Line. Thioredoxin-1 was detected in immersion fixed HeLa human cervical epithelial carcinoma cell line using Mouse Anti-Human/Mouse/Rat Thioredoxin-1 Monoclonal Antibody (Catalog # MAB19701) at 8 µg/mL for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Mouse IgG Secondary Antibody (red; Catalog # NL007) and counterstained with DAPI (blue). Specific staining was localized to cytoplasm. View our protocol for Fluorescent ICC Staining of Cells on Coverslips.

Immunohistochemistry



Thioredoxin-1 in Human Lung. Thioredoxin-1 was detected in immersion fixed paraffin-embedded sections of human lung using Mouse Anti-Human/Mouse/Rat Thioredoxin-1 Monoclonal Antibody (Catalog # MAB19701) at 5 µg/mL for 1 hour at room temperature followed by incubation with the Anti-Mouse IgG VisUCyte™ HRP Polymer Antibody (Catalog # VC001). Before incubation with the primary antibody, tissue was subjected to heat-induced epitope retrieval using Antigen Retrieval Reagent-Basic (Catalog # CTS013). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to cytoplasm in alveolar cells. View our protocol for IHC Staining with VisUCyte HRP Polymer Detection Reagents.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

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BACKGROUND

Thioredoxins (Trxs) are a group of small ubiquitous proteins in all living cells that are key regulators of cellular redox balance (1, 2). The mammalian Trx family has three members. The Trx-1, which is a secreted and cellular protein, the mitochondria-specific Trx-2, and the Trx-like cytosolic protein p32TrxL (3-5). The active site of mammalian Trxs contains two cysteines in the conserved sequence -Y-C-G-P-C-K-. In Trx-1 the conserved cysteine residues are in positions 32 and 35, respectively. Trxs exist either in a reduced or in an oxidized state when the two cysteines at the active site form an intramolecular disulfide bridge. NADPH and the flavoprotein thioredoxin reductase can convert the oxidized Trx into the reduced Trx. Trx-1 is the only extracellular occurring thioredoxin, and is secreted by lymphocytes, hepatocytes, fibroblasts, and several tumor cells. Plasma concentrations of Trx-1 are up to 6 nM (6). In cells, Trx-1 is localized predominantly in the cytoplasm. Small amounts have been detected in the nucleus and in association with the outside surface of the cells. Expression of Trx-1 is increased under various stress conditions such as hypoxia, elevated hydrogen peroxide concentrations, photochemical oxidative stress, and viral and bacterial infections. Biological functions of Trx-1 include growth factor activity, antioxidant properties, a cofactor that provides reducing equivalents, and transcriptional regulation (1, 2). The synovial tissue of rheumatoid arthritis patients produces increased levels of Trx-1 under oxidative stress conditions, and a correlation exists between the plasma levels of Trx-1 and the severity of the disease, making Trx-1 a biomarker for this pathological condition (7, 8).

References:

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