# Human Thioredoxin-1 Antibody

Antigen Affinity-purified Polyclonal Goat IgG
Catalog Number: AF1970

## DESCRIPTION

| | |
|---|---|
| **Species Reactivity** | Human |
| **Specificity** | Detects human Thioredoxin-1 in direct ELISAs and Western blots. In direct ELISAs and Western blots, approximately 25% cross-reactivity with recombinant human Thioredoxin-1 (aa 1-81) is observed. |
| **Source** | Polyclonal Goat IgG |
| **Purification** | Antigen Affinity-purified |
| **Immunogen** | *E. coli*-derived recombinant human Thioredoxin-1<br>Val2-Val105<br>Accession # P10599 |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.<br>*Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS. |

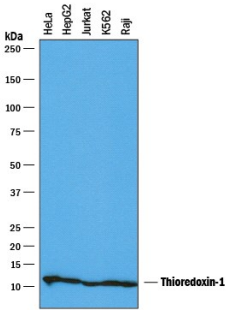
## APPLICATIONS

**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** | 0.1 µg/mL | See Below |
| **Immunohistochemistry** | 5-15 µg/mL | See Below |
| **Simple Western** | 1 µg/mL | See Below |

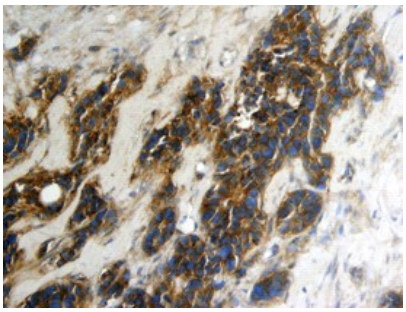
## DATA

### Western Blot



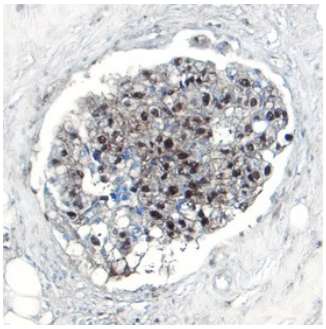

**Detection of Human Thioredoxin-1 by Western Blot.** Western blot shows lysates of HeLa human cervical epithelial carcinoma cell line, HepG2 human hepatocellular carcinoma cell line, Jurkat human acute T cell leukemia cell line, K562 human chronic myelogenous leukemia cell line, and Raji human Burkitt's lymphoma cell line. PVDF membrane was probed with 0.1 µg/mL of Goat Anti-Human Thioredoxin-1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1970) followed by HRP-conjugated Anti-Goat IgG Secondary Antibody (Catalog # HAF019). 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.

### Immunohistochemistry



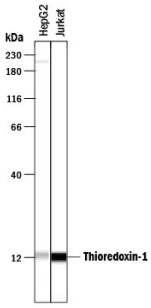
**Thioredoxin-1 in Human Breast Cancer Tissue.** Thioredoxin-1 was detected in immersion fixed paraffin-embedded sections of human breast cancer tissue using Goat Anti-Human Thioredoxin-1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1970) at 15 µg/mL overnight at 4 °C. Tissue was stained using the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). View our protocol for Chromogenic IHC Staining of Paraffin-embedded Tissue Sections.

### Immunohistochemistry



**Thioredoxin-1 in Human Breast Cancer Tissue.** Thioredoxin-1 was detected in immersion fixed paraffin-embedded sections of human breast cancer tissue using Goat Anti-Human Thioredoxin-1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1970) at 5 µg/mL overnight at 4 °C. Tissue was stained using the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). View our protocol for Chromogenic IHC Staining of Paraffin-embedded Tissue Sections.

### Simple Western




**Detection of Human Thioredoxin-1 by Simple Western™.** Simple Western lane view shows lysates of HepG2 human hepatocellular carcinoma cell line and Jurkat human acute T cell leukemia cell line, loaded at 0.2 mg/mL. A specific band was detected for Thioredoxin-1 at approximately 12 kDa (as indicated) using 1 µg/mL of Goat Anti-Human Thioredoxin-1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1970) followed by 1:50 dilution of HRP-conjugated Anti-Goat IgG Secondary Antibody (Catalog # HAF109). This experiment was conducted under reducing conditions and using the 12-230 kDa separation system.



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## PREPARATION AND STORAGE

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|---|---|
| **Reconstitution** | Reconstitute at 0.2 mg/mL in sterile PBS. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.<br>*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.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 6 months, -20 to -70 °C under sterile conditions after reconstitution. |

## 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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