

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human TfR (Transferrin R) in direct ELISAs and Western blots.
Source	Polyclonal Goat IgG
Purification	Antigen Affinity-purified
Immunogen	Human placenta-derived TfR (Transferrin R)
Endotoxin Level	<0.10 EU per 1 µg of the antibody by the LAL method.
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 as a 0.2 µm filtered solution in PBS.

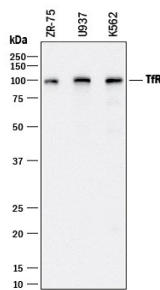
APPLICATIONS

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	0.25 µg/mL	See Below
Immunohistochemistry	5-15 µg/mL	See Below
Blockade of Receptor-ligand Interaction	In a functional ELISA, 0.1-0.5 µg/mL of this antibody will block 50% of the binding of 25 ng/mL of Recombinant Human TfR (Transferrin R) (Catalog # 2474-TR) to immobilized human Holo-Transferrin (Catalog # 2914-HT) coated at 500 ng/mL (100 µL/well). At 10 µg/mL, this antibody will block >90% of the binding.	

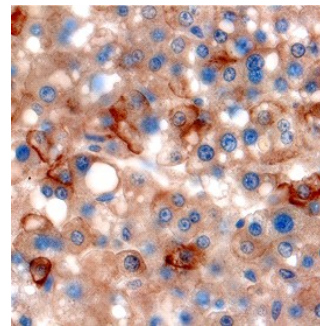
DATA

Western Blot



Detection of Human TfR (Transferrin R) by Western Blot. Western blot shows lysates of ZR-75 human breast cancer cell line, U937 human histiocytic lymphoma cell line, and K562 human chronic myelogenous leukemia cell line. PVDF membrane was probed with 0.25 µg/mL of Goat Anti-Human TfR (Transferrin R) Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2474) followed by HRP-conjugated Anti-Goat IgG Secondary Antibody (Catalog # HAF017). A specific band was detected for TfR (Transferrin R) at approximately 95 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.

Immunohistochemistry



TfR (Transferrin R) in Human Liver. TfR (Transferrin R) was detected in immersion fixed paraffin-embedded sections of human liver using Goat Anti-Human TfR (Transferrin R) Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2474) 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). Specific labeling was localized to the plasma membrane of hepatocytes. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

PREPARATION AND STORAGE

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. *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. <ul style="list-style-type: none"> • 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.

BACKGROUND

The Transferrin Receptor (TfR or TfR-1, designated CD71) is a type 2 transmembrane glycoprotein expressed on erythroid progenitors, muscle cells and proliferating cells as a 188 kDa disulfide-linked homodimer of 95 kDa monomers (1-4). As the major mediator of cellular iron uptake, it binds and internalizes diferric transferrin, allowing iron release at the low pH of the endosome (2, 5). The human TfR cDNA encodes 760 amino acids (aa) including a 67 aa N-terminal intracellular domain, a 21 aa transmembrane domain, and a 672 aa extracellular domain (ECD) with helical, peptidase (nonfunctional), and ligand binding domains, including an RGD potential integrin binding site (5). Human TfR ECD shares 75 - 80% aa identity with mouse, rat, feline, canine, equine, porcine and bovine TfR. A 679 aa alternately spliced form begins at aa 82 and is presumably secreted, while in an 804 aa form, 44 aa are inserted at aa 518 within the peptidase region (6). Most soluble TfR (sTfR) arises from trypsin proteolysis at aa 100, producing the circulating form of TfR (3). sTfR concentration in plasma or serum is proportional to total TfR and can be increased by iron deficiency (3). Erythroid progenitors, which use iron for hemoglobin synthesis, normally account for the bulk of total body TfR production (3). Since rapidly growing cells require iron to replicate DNA, cancer cells can express up to 5-fold more TfR than quiescent cells in the surrounding tissue (2, 4). Antibody targeting of TfR can inhibit tumor cell proliferation and induce apoptosis (2, 4). The hereditary hemochromatosis protein HFE competes with diferric transferrin for binding to TfR, and targets TfR for degradation rather than recycling (2, 5). TfR has been reported to have ferritin-independent functions in T cell development, immunological synapse formation and galectin-3-mediated cell death, and to be a cell entry receptor for New World hemorrhagic fever arenaviruses (2, 4, 7).

References:

1. Schneider, C. *et al.* (1984) *Nature* **311**:675.
2. Daniels, T.R. *et al.* (2006) *Clin. Immunol.* **121**:144.
3. Skikne, B.S. (2008) *Am. J. Hematol.* **83**:872.
4. Macedo, M.F. and M. deSousa (2008) *Inflamm. Allergy Drug Targets* **7**:41.
5. Aisen, P. (2004) *Int. J. Biochem. Cell Biol.* **36**:2137.
6. Entrez protein Accession # EAW53671, EAW53672.
7. Radoshitzky, S.R. *et al.* (2007) *Nature* **446**:92.