Human TfR (Transferrin R) Antibody

Monoclonal Mouse IgG_{2A} Clone # 30064

Catalog Number: MAB24742

DESCRIPTION

Species Reactivity	Human
Specificity	Detects huma TfR (Transferrin R) in direct ELISAs.
Source	Monoclonal Mouse IgG_{2A} Clone # 30064
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line, NS0-derived human TfR (Transferrin R) protein Cys89-Phe760 Accession # CAA25527
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.

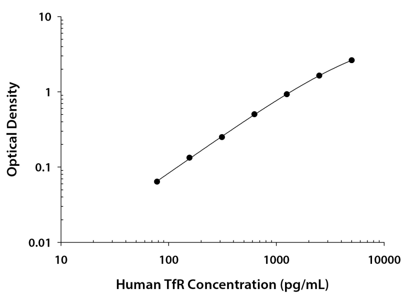
APPLICATIONS

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.*

ELISA	This antibody functions as an ELISA detection antibody when paired with Mouse Anti-Human TfR (Transferrin R) Monoclonal Antibody (Catalog # MAB24741). *This product is intended for assay development on various assay platforms requiring antibody pairs. We recommend the Human TfR DuoSet ELISA Kit (Catalog # DY2474) for convenient development of a sandwich ELISA.*

DATA

ELISA



Human TfR (Transferrin R) ELISA Standard Curve. Recombinant Human TfR (Transferrin R) protein was serially diluted 2-fold and captured by Mouse Anti-Human TfR (Transferrin R) Monoclonal Antibody (Catalog # MAB24741) coated on a Clear Polystyrene Microplate (Catalog # DY990). Mouse Anti-Human TfR (Transferrin R) Monoclonal Antibody (Catalog # MAB24742) was biotinylated and incubated with the protein captured on the plate. Detection of the standard curve was achieved by incubating Streptavidin-HRP (Catalog # DY998) followed by Substrate Solution (Catalog # DY999) and stopping the enzymatic reaction with Stop Solution (Catalog # DY994).

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

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:

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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.