

Product Specification Sheet

Human Transferrin Receptor 1 (TfR1) Antibodies

Cat. # TFR12-M

Mouse Monoclonal Anti-human TfR1 IgG # 2

SIZE: 100 ug

FORM: Soln

Lyophilized

Elemental iron is required for a variety of normal cellular functions and vital for proper growth and development. **Transferrin (Tf)**, a serum glycoprotein of ~80 kDa and synthesized in the liver, is the primary protein of inter-organ transport of nonheme iron. Tf can bind two iron atoms. Tf binds to membrane **Transferrin receptors (TfRs)** and taken up by endocytosis. Iron is released from Tf, within acidic endosomes, into the cytoplasm apparently through the action of DMT1. The apoTf-TfR complex is returned to the cell surface, where, apo-Tf dissociates from TfR at the extracellular pH. The classical TfR, now termed **TfR1**, is a homodimeric (95 kDa subunits) type II membrane glycoprotein that binds two molecules of Tf. Human TfR1 (human 760 aa; mouse 763 aa) has a cytoplasmic domain 1-67aa, 68-88 aa TM, and 89-760 aa as extracellular domains. A monomeric serum form or **soluble TfR1** (~80 kDa) also exists that lacks residues 1-100 aa. Recently, a second Tf receptor, **TfR2**, has been cloned and characterized. TfR2 shares 45% identity with TfR1, and 27% with PMSA. Human TfR2 (human alpha 801 aa, Chromosome 7q22; mouse alpha 798 aa;) is predicted to contain a cytoplasmic domain of 1-80 aa, 1 TM domain followed by 105-801aa as the extracellular domain. It is highly expressed in liver and peripheral blood mononuclear cells. In contrast to TfR1, expression of TfR2 is not down regulated as a result of iron overload, consistent with the absence iron-responsive element in TfR2. It is alternatively spliced to **alpha and beta isoforms**. TfR2-beta protein lacked the N-terminal portion of the TfR2-alpha including the putative TM domain.

Storage

Short-term: unopened, undiluted liquid vials at -20°C and powder at 4°C or -20°C.

Long-term: at -20°C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

Stability: 6-12 months at -20°C or below.

Shipping: 4°C for solutions and room temp for powder.

Recommended Usage

Western Blotting (1:1K antibody using ECL technique). TfR1 (full length) is approx 95 kDa. TfR11-C can be used +ve control. #TFR12-C (~80 kDa) may serve as a control for soluble TfR1.

ELISA: Control protein can be used to coat ELISA plates at 1 ug/ml and detected with antibodies (0.5-1 ug/ml pure).

Histochemistry & Immunofluorescence: Recommended for paraffin-embedded tissues, Immunofluorescence, and immunocytochemistry at 1=5 ug/ml.

Specificity & Cross-reactivity

TFR12-M epitope has been localized to the cytoplasmic N-terminus (1-30 aa) of TfR1. This domain is missing in soluble TfR1. TFR12-M crossreact with TfR1 from mouse, rat, chicken, and hamster. No significant reactivity is seen with TfR2. other species. Antibody reactivity in other species is not established. Purified human TfR1 protein (Cat # TFR11-C) can be used a positive control.

General References: Schneider C et al (1984) Nature 311, 675-678; McClelland A et al (1984) Cell 39, 267-274; Shih YJ et al (1990) JBC 265, 19077-19081; ; Nelson N et al (1999) EMBO J. 18, 4361-4371 (review); Cairo G and Pietrangelo A et al (2000) Biochem. J. 352, 241-250

2. Citations of for ADI Antibodies (see updates at the web site)

Yersin A, 2007, Biophys. J., Sep 2007; in press, , Martin PM, 2006, Invest. Ophthalmol. Vis. Sci., 47: 4238, WB, IF Peng Y, 2004, Mol. Biol. Cell, 15: 384 - 396, , Chen XW, 2006, JBC 281, 38609 - 38616, , IF Yersin A, 2007, Biophys. J., Sep 2007, , Engle MP, 2006, Neuroscience 138, 1277-1287, WB, Wang J, 2005, Neurochem. Intl. 47, 514-517, WB,

*This product is for In vitro research use only.

Related material available from ADI

Antibodies NRAMP1/2, MTP1, Transferrin, and TfRs receptors (TfR1 and TfR2) , Ferritin, H and L-chain, Hemeoxygenases 1-3, HFE, Dcytb, IRP1 and IRP2, Frataxin;

Human Ferritin ELISA Kit, Human Transferrin ELISA kit

TFR12-M 71216A

Source of Antigen and Antibodies

Antigen	Purified recombinant human TfR1 (~95 kDa) protein; epitope location ~ N-terminus
Ab Host/type	Mouse, monoclonal purified IgG1 (# TFR12-M) purified using Protein A/G column chromatography
2-Ab	Goat Anti-mouse IgG-HRP conjugate Cat # 40320 (AP, biotin, FITC conjugates also available)
-ve control	Cat # 20008-1, Mouse (non-immune) Serum IgG, purified, suitable for ELISA, Western, IHC as -ve control

Form & Storage of Antibodies/Peptide Control

Affinity pure IgG

100 ug/100ul solution lyophilized powder

Supplied in **Buffer:** PBS+0.1% BSA

Reconstitute powder in PBS at 1mg/ml

Control/blocking peptide

100 ug/100 ul solution lyophilized powder

Supplied in Buffer: PBS pH 7.5,

Reconstitute powder in PBS at 1 mg/ml.

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