PRODUCT INFORMATION

Transferrin Receptor Protein 1/CD71 Extracellular Domain (human, recombinant)

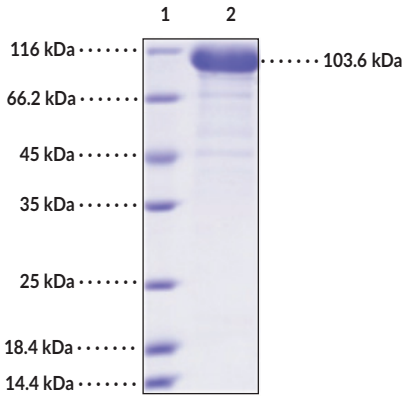
Item No. 32031

Overview and Properties

Synonyms:	IMD46, P90, TfR1, Transferrin Receptor Protein 1
Source:	Recombinant N-terminal human IgG1 Fc-tagged transferrin receptor expressed in HEK293 cells
Amino Acids:	89-760
Molecular Weight:	103.6 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥87% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: Transferrin Receptor Protein 1/CD71 Extracellular Domain

SDS-PAGE Analysis of Transferrin Receptor Protein 1/CD71 Extracellular Domain

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Description

Transferrin receptor protein 1 (TfR1), also known as CD71, is a homodimeric transmembrane receptor for transferrin (Item No. 32030) that facilitates iron delivery into cells and is encoded by *TFRC* in human.[1] It is composed of two TfR1 monomers, each composed of a 67-amino acid cytoplasmic tail with an internalization motif, a membrane spanning portion, a stalk region that covalently links the monomers, and an extracellular ectodomain. The ectodomain binds transferrin and is composed of an apical domain, a protease-like domain, and a helical domain that drives TfR1 dimerization.[1,2] TfR1 is ubiquitously expressed, except on mature red blood cells and certain terminally differentiated cells, with the highest expression on immature erythroid cells and in the placenta, and is involved in erythropoiesis, lymphocyte development, and hematopoietic expansion in the bone marrow.[3,4] TfR1/transferrin-mediated iron transport contributes to the intracellular iron pool required for ferroptosis and anti-TfR1 antibodies have been used in combination with anti-malondialdehyde antibodies to identify ferroptotic cells *in vitro* and human cancer tissue in a mouse xenograft model.[5] A soluble form of TFR1 is present in serum and increased levels are associated with autoimmune hemolytic anemia, polycythemia vera, and iron deficiency anemia, while decreased levels are associated with chronic renal failure and aplastic anemia.[6] *TFRC* is overexpressed in various breast cancer tumors and gliomas and positively correlated with poor prognosis.[7] Cayman's Transferrin Receptor Protein 1/CD71 Extracellular Domain (human, recombinant) protein is a disulfide-linked homodimer. The reduced monomer, comprised of TfR1 (amino acids 89-760) fused to human IgG1 Fc at its N-terminus, consists of 932 amino acids and has a calculated molecular weight of 103.6 kDa.

References

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3. Ponka, P. and Lok, C.N. The transferrin receptor: Role in health and disease. *Int. J. Biochem. Cell Biol.* **31(10)**, 1111-1137 (1999).
4. Wang, S., He, X., Wu, Q., *et al.* Transferrin receptor 1-mediated iron uptake plays an essential role in hematopoiesis. *Haematologica* **105(8)**, 2071-2082 (2020).
5. Feng, H., Schorpp, K., Jin, J., *et al.* Transferrin receptor is a specific ferroptosis marker. *Cell Rep.* **30(10)**, 3411-3423 (2020).
6. Speeckaert, M.M., Speeckaert, R., and Delanghe, J.R. Biological and clinical aspects of soluble transferrin receptor. *Crit. Rev. Clin. Lab. Sci.* **47(5-6)**, 213-228 (2010).
7. Shen, Y., Li, X., Dong, D., *et al.* Transferrin receptor 1 in cancer: A new sight for cancer therapy. *Am. J. Cancer Res.* **8(6)**, 916-931 (2018).

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