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PDIA1 Antibody

Catalog # ASC11936

Product Information

Application	WB, IHC, IF, E
Primary Accession	P07237
Other Accession	NP_000909, 20070125
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	57116
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	PDIA1 antibody can be used for detection of PDIA1 by Western blot at 1 - 2 g/ml. Antibody can also be used for immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	5034
Other Names	Protein disulfide-isomerase, PDI, 5.3.4.1, Cellular thyroid hormone-binding protein, Prolyl 4-hydroxylase subunit beta, p55, P4HB, ERBA2L, PDI, PDIA1, PO4DB
Target/Specificity	P4HB; PDIA1 antibody is human, mouse and rat reactive.
Reconstitution & Storage	PDIA1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	PDIA1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	P4HB
Synonyms	ERBA2L, PDI, PDIA1, PO4DB
Function	This multifunctional protein catalyzes the formation, breakage and rearrangement of disulfide bonds. At the cell surface, seems to act as a reductase that cleaves disulfide bonds of proteins attached to the cell. May therefore cause structural modifications of exofacial proteins. Inside the cell, seems to form/rearrange disulfide bonds of nascent proteins. At high concentrations and following phosphorylation by FAM20C, functions as a chaperone that inhibits aggregation of misfolded proteins (PubMed:32149426). At low concentrations, facilitates aggregation

	(anti-chaperone activity). May be involved with other chaperones in the structural modification of the TG precursor in hormone biogenesis. Also acts as a structural subunit of various enzymes such as prolyl 4-hydroxylase and microsomal triacylglycerol transfer protein MTTP. Receptor for LGALS9; the interaction retains P4HB at the cell surface of Th2 T helper cells, increasing disulfide reductase activity at the plasma membrane, altering the plasma membrane redox state and enhancing cell migration (PubMed:21670307).
Cellular Location	Endoplasmic reticulum. Endoplasmic reticulum lumen. Melanosome. Cell membrane; Peripheral membrane protein. Note=Highly abundant. In some cell types, seems to be also secreted or associated with the plasma membrane, where it undergoes constant shedding and replacement from intracellular sources (Probable). Localizes near CD4-enriched regions on lymphoid cell surfaces (PubMed:11181151). Identified by mass spectrometry in melanosome fractions from stage I to stage IV (PubMed:10636893) Colocalizes with MTTP in the endoplasmic reticulum (PubMed:23475612) {ECO:0000269|PubMed:10636893, ECO:0000269|PubMed:11181151, ECO:0000269|PubMed:23475612, ECO:0000305}

Background

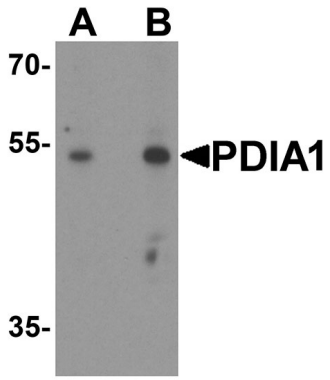
PDIA1 (protein disulfide isomerase family A member 1) is the beta subunit of prolyl 4-hydroxylase, a highly abundant multifunctional enzyme that belongs to the protein disulfide isomerase family. When present as a tetramer consisting of two alpha and two beta subunits, this enzyme is involved in hydroxylation of prolyl residues in preprocollagen (1,2). PDIA1 is also a disulfide isomerase containing two thioredoxin domains that catalyze the formation, breakage and rearrangement of disulfide bonds (3). Other known functions include its ability to act as a chaperone that inhibits aggregation of misfolded proteins in a concentration-dependent manner, its ability to bind thyroid hormone, its role in both the influx and efflux of S-nitrosothiol-bound nitric oxide, and its function as a subunit of the microsomal triglyceride transfer protein complex (4).

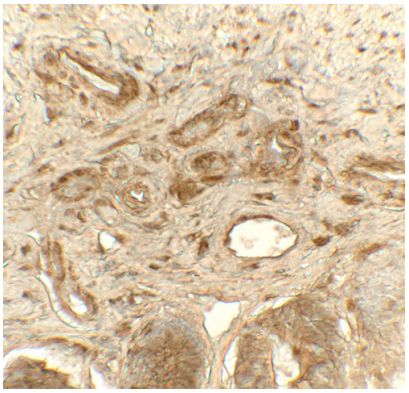
References

Pihlajaniemi T, Helaakoski T, Tasanen K, et al. Molecular cloning of the beta-subunit of human prolyl 4-hydroxylase. This subunit and protein disulphide isomerase are products of the same gene. EMBO J. 1987; 6L:643-9.
Walmsley AR, Batten MR, Lad U, et al. Intracellular retention of procollagen within the endoplasmic reticulum is mediated by prolyl 4-hydroxylase. J. Biol. Chem. 1999; 274:14884-92.
Koivu J, Myllyla R, Halaakoski T, et al. A singel polypeptide acts both as the beta subunit of prolyl 4-hydroxylase and as a protein disulfide-isomerase. J. Biol. Chem. 1987; 262:6447-9.
Kivirikko KI and Myllyharju J. Prolyl 4-hydroxylases and their protein disulfide isomerase subunit. Matrix Biol. 1998; 16:357-68.

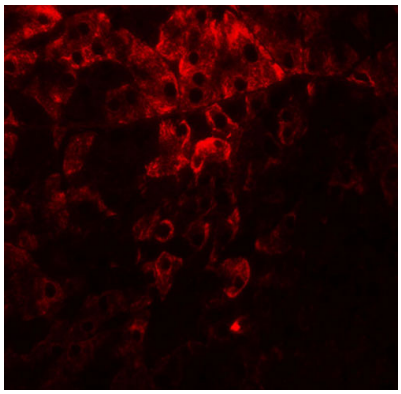
Images

Western blot analysis of PDIA1 in rat small intestine tissue lysate with PDIA1 antibody at (A) 1 and (B) 2 µg/ml.





Immunohistochemistry of PDIA1 in rat small intestine tissue with PDIA1 antibody at 5 µg/mL.



Immunofluorescence of PDIA1 in rat small intestine tissue with PDIA1 antibody at 20 µg/mL.