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TMP21 Antibody

Catalog # ASC10484

Product Information

Application	WB, E, IHC-P
Primary Accession	P49755
Other Accession	AAD31941, 4885697
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	24976
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	TMP21 antibody can be used for detection of TMP21 by Western blot at 0.5 - 2 g/mL. Antibody can also be used for immunohistochemistry starting at 5 g/mL.

Additional Information

Gene ID	10972
Other Names	TMP21 Antibody: p23, TMP21, S31I125, Tmp-21-I, S31III125, P24(DELTA), Transmembrane emp24 domain-containing protein 10, 21 kDa transmembrane-trafficking protein, transmembrane emp24-like trafficking protein 10 (yeast)
Target/Specificity	TMED10;
Reconstitution & Storage	TMP21 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	TMP21 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	TMED10 (HGNC:16998)
Synonyms	TMP21
Function	Cargo receptor involved in protein vesicular trafficking and quality control in the endoplasmic reticulum (ER) and Golgi (PubMed:10052452, PubMed:11726511, PubMed:16641999, PubMed:17288597, PubMed:19296914, PubMed:20427317, PubMed:21219331, PubMed:27569046). The p24 protein family is a group of transmembrane

proteins that bind coat protein complex I/COPI and coat protein complex II/COPII involved in vesicular trafficking between the membranes (PubMed:10052452). Acts at the lumenal side for incorporation of secretory cargo molecules into transport vesicles and involved in vesicle coat formation at the cytoplasmic side (PubMed:20427317, PubMed:27569046). Mainly functions in the early secretory pathway and cycles between the ER, ER-Golgi intermediate compartment (ERGIC) and Golgi, mediating cargo transport through COPI and COPII-coated vesicles (PubMed:10052452, PubMed:10852829, PubMed:12237308). In COPII vesicle-mediated anterograde transport, involved in the transport of GPI-anchored proteins by acting together with TMED2 as their cargo receptor; the function specifically implies SEC24C and SEC24D of the COPII vesicle coat and lipid raft-like microdomains of the ER (PubMed:20427317, PubMed:27569046). Recognizes GPI anchors structural remodeled in the ER by the GPI inositol-deacylase/PGAP1 and the metallophosphoesterase MPPE1/PGAP5 (By similarity). In COPI vesicle-mediated retrograde transport, involved in the biogenesis of COPI vesicles and vesicle coat recruitment (PubMed:11726511). Involved in trafficking of amyloid beta A4 protein and soluble APP-beta release (independent from the modulation of gamma-secretase activity) (PubMed:17288597). Involved in the KDELR2-mediated retrograde transport of the toxin A subunit (CTX-A- K63)together with COPI and the COOH terminus of KDELR2 (By similarity). On Golgi membranes, acts as a primary receptor for ARF1-GDP, a GTP- binding protein involved in COPI-vesicle formation (PubMed:11726511). Increases coatomer-dependent GTPase-activating activity of ARFGAP2 which mediates the hydrolysis of ARF1-bound GTP and therefore modulates protein trafficking from the Golgi apparatus (PubMed:19296914). Involved in the exocytic trafficking of G protein-coupled receptors F2LR1/PAR2 (trypsin and tryspin-like enzyme receptor), OPRM1 (opioid receptor) and P2RY4 (UTD and UDP receptor) from the Golgi to the plasma membrane, thus contributing to receptor resensitization (PubMed:21219331). In addition to its cargo receptor activity, may also act as a protein channel after oligomerization, facilitating the post- translational entry of leaderless cytoplasmic cargo into the ERGIC (PubMed:32272059). Involved in the translocation into ERGIC, the vesicle entry and the secretion of leaderless cargos (lacking the secretion signal sequence), including the mature form of interleukin 1/IL-1 family members, the alpha-crystallin B chain HSPB5, the carbohydrate-binding proteins galectin-1/LGALS1 and galectin-3/LGALS3, the microtubule-associated protein Tau/MAPT, and the annexin A1/ANXA1; the translocation process is dependent on cargo protein unfolding and enhanced by chaperones HSP90AB1 and HSP90B1/GRP9 (PubMed:32272059). Could also associates with the presenilin-dependent gamma-secretase complex in order to regulate gamma-cleavages of the amyloid beta A4 protein to yield amyloid-beta 40/Abeta40 (PubMed:16641999).

Cellular Location

Endoplasmic reticulum membrane; Single-pass type I membrane protein. Endoplasmic reticulum-Golgi intermediate compartment membrane; Single-pass type I membrane protein. Golgi apparatus membrane; Single-pass type I membrane protein. Golgi apparatus, cis-Golgi network membrane; Single-pass type I membrane protein. Golgi apparatus, trans-Golgi network membrane {ECO:0000250|UniProtKB:Q63584}; Single-pass type I membrane protein. Cytoplasmic vesicle, secretory vesicle membrane; Single-pass type I membrane protein. Cell membrane {ECO:0000250|UniProtKB:Q63584}; Single-pass type I membrane protein. Melanosome Note=Identified by mass spectrometry in melanosome fractions from stage I to stage IV.

Background

TMP21 Antibody: TMP21 is a ubiquitously expressed protein that is involved in vesicular targeting and

protein transport. More recent experiments have shown that it is also a component in the presenilin complex and modulates the gamma-secretase but not the epsilon-secretase cleavage activity of the amyloid precursor protein. The presenilin complex is composed of the proteins APH1, nicastrin, and PEN2 in addition to presenilin-1. Together, these proteins cleave the amyloid precursor protein at what is known as the gamma- and epsilon-sites and can lead to the accumulation of the Abeta cleavage product that is associated with Alzheimer's disease. Co-immunoprecipitation experiments using antibodies against these proteins also yielded TMP21 indicating that TMP21 may play a role in the regulation of this complex. Suppression of TMP21 expression by siRNA in transfected cells caused increased gamma-secretase activity but not epsilon-secretase activity, and increased Abeta; production, demonstrating that TMP21 can modulate gamma-secretase activity.

References

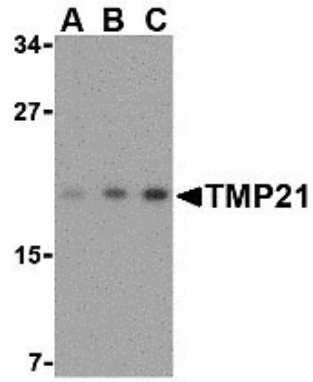
Blunt R, Feick P, Puype M, et al. Tmp21 and p24A, two type I proteins enriched in pancreatic microsomal membranes, are members of a protein family involved in vesicular trafficking. J. Biol. Chem.1996; 271:17183-9.

Chen F, Hasegawa H, Schmitt-Ulms G, et al. TMP21 is a presenilin complex component that modulates γ-secretase but not ε-secretase activity. Nature 2006; 440:1208-12.

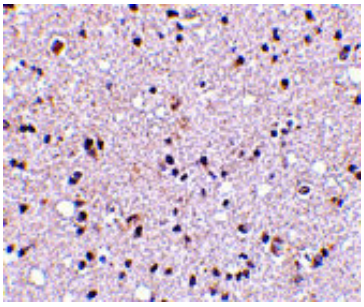
Periz G and Fortini ME. Functional reconstitution of γ-secretase through coordinated expression of presenilin, nicastrin, aph-1, and pen-2. J. Neurosci. Res. 2004; 77:309-22.

Selkoe DJ. The cell biology of β-amyloid precursor protein and presenilin in Alzheimer’s disease. Trends Cell Biol. 1998; 8:447-53.

Images



Western blot analysis of TMP21 in mouse brain tissue lysate with TMP21 antibody at (A) 0.5, (B) 1 and (C) 2 µg/mL.



Immunohistochemistry of TMP21 in human brain tissue with TMP21 antibody at 5 µg/mL.