10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

ATG4D Antibody

Catalog # ASC11885

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q86TL0
Other Accession	NP_116274, 27903825
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	52922
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	ATG4D antibody can be used for detection of ATG4D 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	84971
Other Names	Cysteine protease ATG4D, 3.4.22.-, AUT-like 4 cysteine endopeptidase, Autophagin-4, Autophagy-related cysteine endopeptidase 4, Autophagy-related protein 4 homolog D, Cysteine protease ATG4D, mitochondrial, ATG4D, APG4D, AUTL4
Target/Specificity	ATG4D; ATG4D antibody is human, mouse and rat reactive. At least two isoforms of ATG4D are known to exist; this antibody will detect only the larger isoform. ATG4D is predicted to not cross-react with other ATG4 proteins.
Reconstitution & Storage	ATG4D antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	ATG4D Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ATG4D {ECO:0000303|PubMed:19549685, ECO:0000312|HGNC:HGNC:20789}
Function	[Cysteine protease ATG4D]: Cysteine protease that plays a key role in autophagy by mediating both proteolytic activation and delipidation of ATG8 family proteins (PubMed:21177865, PubMed:29458288, PubMed:30661429). The protease activity is required for proteolytic activation of ATG8 family proteins: cleaves the C-terminal amino acid of ATG8 proteins MAP1LC3 and GABARAPL2, to reveal a C-terminal glycine (PubMed:21177865). Exposure of

	the glycine at the C-terminus is essential for ATG8 proteins conjugation to phosphatidylethanolamine (PE) and insertion to membranes, which is necessary for autophagy (By similarity). In addition to the protease activity, also mediates delipidation of ATG8 family proteins (PubMed:29458288, PubMed:33909989). Catalyzes delipidation of PE-conjugated forms of ATG8 proteins during macroautophagy (PubMed:29458288, PubMed:33909989). Also involved in non-canonical autophagy, a parallel pathway involving conjugation of ATG8 proteins to single membranes at endolysosomal compartments, by catalyzing delipidation of ATG8 proteins conjugated to phosphatidylserine (PS) (PubMed:33909989). ATG4D plays a role in the autophagy-mediated neuronal homeostasis in the central nervous system (By similarity). Compared to other members of the family (ATG4A, ATG4B or ATG4C), constitutes the major protein for the delipidation activity, while it promotes weak proteolytic activation of ATG8 proteins (By similarity). Involved in phagophore growth during mitophagy independently of its protease activity and of ATG8 proteins: acts by regulating ATG9A trafficking to mitochondria and promoting phagophore- endoplasmic reticulum contacts during the lipid transfer phase of mitophagy (PubMed:33773106).
Cellular Location	[Cysteine protease ATG4D]: Cytoplasm
Tissue Location	Widely expressed in testis.

Background

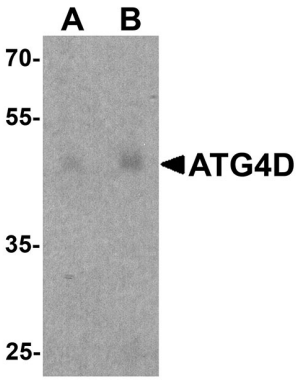
Autophagy, the process of bulk degradation of cellular proteins through an autophagosomic-lysosomal pathway is important for normal growth control and may be defective in tumor cells. It is involved in the preservation of cellular nutrients under starvation conditions as well as the normal turnover of cytosolic components (1,2). ATG4D, also known as AUTL4, is one of four mammalian orthologs of the yeast ATG4 protein; all four are cysteine proteases (3). ATG4 is required for ATG8 conjugation to phosphatidylethanolamine on autophagosomal membranes. In mammals, each ATG4 homolog shows a selective preference for the ATG8 homologs (4).

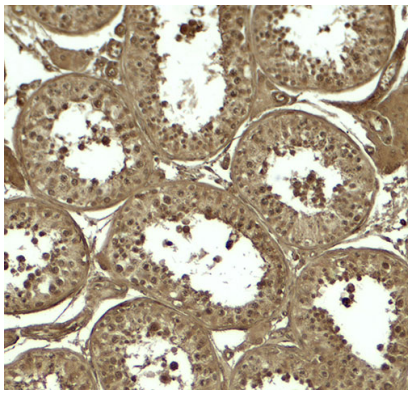
References

Gozuacik D and Kimchi A. Autophagy as a cell death and tumor suppressor mechanism. Oncogene 2004; 23:2891-906.
Kisen GO, Tessitore L, Costelli P, et al. Reduced autophagic activity in primary rat hepatocellular carcinoma and ascites hepatoma cells. Carcinogenesis 1993; 14:2501-5.
Marino G, Uria JA, Puente XS, et al. Human autophagins, a family of cysteine proteinases potentially implicated in cell degradation by autophagy. J. Biol. Chem. 2003; 278:3671-8.
Li M, Hou Y, Wang J, et al. Kinetic comparisons of mammalian Atg4 homologues indicate selective preferences towards diverse Atg8 substrates. J. Biol. Chem. 2011; 286:7327-38.

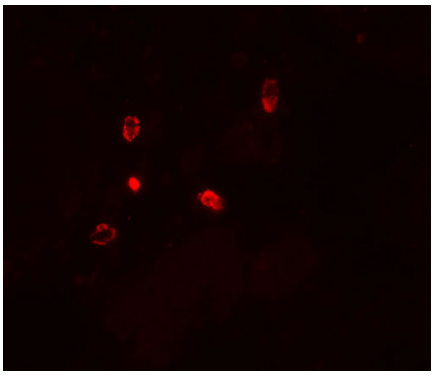
Images

Western blot analysis of ATG4D in human testis tissue lysate with ATG4D antibody at (A) 1 and (B) 2 µg/ml.





Immunohistochemistry of ATG4D in human testis tissue with ATG4D antibody at 5 µg/ml.



Immunofluorescence of ATG4D in human testis tissue with ATG4D antibody at 20 µg/ml.