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ATG5 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1812b

Product Information

Application	WB, IHC-P, IF, E
Primary Accession	Q9H1Y0
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	32447
Antigen Region	209-238

Additional Information

Gene ID	9474
Other Names	Autophagy protein 5, APG5-like, Apoptosis-specific protein, ATG5, APG5L, ASP
Target/Specificity	This ATG5 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 209-238 amino acids from the C-terminal region of human ATG5.
Dilution	WB~~1:1000 IHC-P~~1:100~500 IF~~1:25 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	ATG5 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ATG5 (HGNC:589)
Synonyms	APG5L, ASP
Function	Involved in autophagic vesicle formation. Conjugation with ATG12, through a ubiquitin-like conjugating system involving ATG7 as an E1-like activating enzyme and ATG10 as an E2-like conjugating enzyme, is essential for its

	function. The ATG12-ATG5 conjugate acts as an E3- like enzyme which is required for lipidation of ATG8 family proteins and their association to the vesicle membranes. Involved in mitochondrial quality control after oxidative damage, and in subsequent cellular longevity. Plays a critical role in multiple aspects of lymphocyte development and is essential for both B and T lymphocyte survival and proliferation. Required for optimal processing and presentation of antigens for MHC II. Involved in the maintenance of axon morphology and membrane structures, as well as in normal adipocyte differentiation. Promotes primary ciliogenesis through removal of OFD1 from centriolar satellites and degradation of IFT20 via the autophagic pathway. As part of the ATG8 conjugation system with ATG12 and ATG16L1, required for recruitment of LRRK2 to stressed lysosomes and induction of LRRK2 kinase activity in response to lysosomal stress (By similarity).
Cellular Location	Cytoplasm. Preautophagosomal structure membrane; Peripheral membrane protein. Note=Colocalizes with nonmuscle actin. The conjugate detaches from the membrane immediately before or after autophagosome formation is completed (By similarity). Also localizes to discrete punctae along the ciliary axoneme and to the base of the ciliary axoneme. Under starved conditions, the ATG12-ATG5-ATG16L1 complex is translocated to phagophores driven by RAB33B (PubMed:32960676). {ECO:0000250, ECO:0000269|PubMed:32960676}
Tissue Location	Ubiquitous. The mRNA is present at similar levels in viable and apoptotic cells, whereas the protein is dramatically highly expressed in apoptotic cells

Background

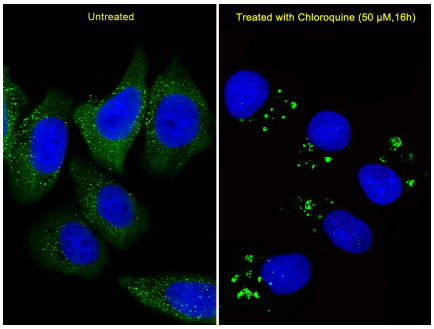
Macroautophagy is the major inducible pathway for the general turnover of cytoplasmic constituents in eukaryotic cells, it is also responsible for the degradation of active cytoplasmic enzymes and organelles during nutrient starvation. Macroautophagy involves the formation of double-membrane bound autophagosomes which enclose the cytoplasmic constituent targeted for degradation in a membrane bound structure, which then fuse with the lysosome (or vacuole) releasing a single-membrane bound autophagic bodies which are then degraded within the lysosome (or vacuole). APG5, required for autophagy, conjugates to ATG12 and associates with an isolation membrane to form a cup-shaped isolation membrane and autophagosome. The conjugate detaches from the membrane immediately before or after autophagosome formation is completed. APG5 may also play an important role in the apoptotic process, possibly within the modified cytoskeleton. Its expression is a relatively late event in the apoptotic process, occurring downstream of caspase activity.

References

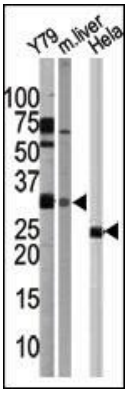
Baehrecke EH. Nat Rev Mol Cell Biol. 6(6):505-10. (2005) Lum JJ, et al. Nat Rev Mol Cell Biol. 6(6):439-48. (2005) Greenberg JT. Dev Cell. 8(6):799-801. (2005) Levine B. Cell. 120(2):159-62. (2005) Shintani T and Klionsky DJ. Science. 306(5698):990-5. (2004) Hammond E.M., et al. FEBS Lett. 425:391-395(1998) Strausberg R.L., et al. PNAS 99:16899-16903(2002) Grand R.J.A., et al. Exp. Cell Res. 218:439-451(1995) Mizushima N., et al. J. Biol. Chem. 273:33889-33892(1998) Mizushima N., et al. J. Cell Biol. 152:657-668(2001)

Images

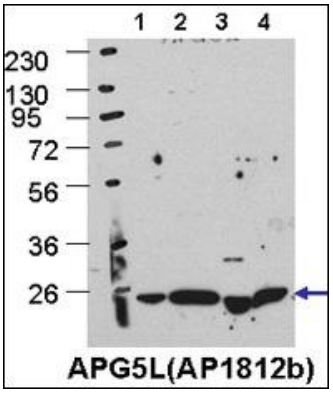
Fluorescent image of U251 cells stained with ATG5 Antibody (C-term) (Cat#AP1812b). AP1812b was diluted at 1:25 dilution. U251 cells were treated with Chloroquine (50 µM, 16h), An Alexa Fluor 488-conjugated goat anti-rabbit lgG at 1:400 dilution was used as the secondary antibody (green). DAPI was used to stain the



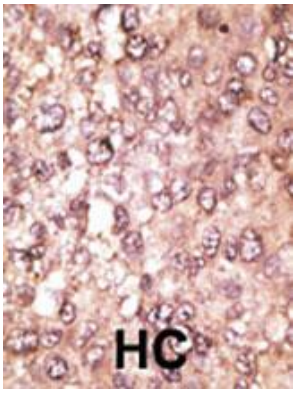
cell nuclear (blue).



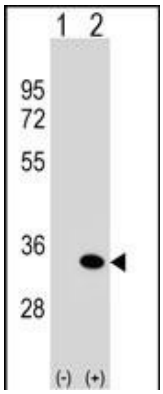
Western blot analysis of APG5L Pab in Y79 cell line, mouse liver tissue, and Hela cell line lysates(Cat. #AP1812b).



Cos7, HEK293, MEF, and Hela cells left to right, respectively. Data courtesy of Drs. Jiefei Geng and Dan Klionsky, University of Michigan.



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.



Western blot analysis of APG5L (arrow) using rabbit polyclonal APG5L Antibody (P224) (Cat. #AP1812b). 293 cell lysates (2 ug/lane) either nontransfected (Lane 1) or transiently transfected (Lane 2) with the APG5L gene.

Citations

- Inhibition of the autophagic protein ULK1 attenuates axonal degeneration in vitro and in vivo, enhances translation, and modulates splicing
- DOWNREGULATED APOPTOSIS AND AUTOPHAGY AFTER ANTI-Aβ IMMUNOTHERAPY IN ALZHEIMER'S DISEASE.
- Sphingosine Kinase 1 Protects Renal Tubular epithelial cells from Renal Fibrosis via Induction of Autophagy.
- Studying Autophagy in Zebrafish.
- Calpain-mediated cleavage of collapsin response mediator protein-2 drives acute axonal degeneration.
- The germline-enriched Ppp1r36 promotes autophagy.
- Promotion of Pro-Apoptotic Signals by Lysosomal Photodamage: Mechanistic Aspects and Influence of Autophagy.
- High glucose environment inhibits cranial neural crest survival by activating excessive autophagy in the chick embryo.
- Cell type-dependent ROS and mitophagy response leads to apoptosis or necroptosis in neuroblastoma.
- GMI, an immunomodulatory protein from Ganoderma microsporum, potentiates cisplatin-induced apoptosis via autophagy in lung cancer cells.
- Early and sustained activation of autophagy in degenerating axons after spinal cord injury.
- Autophagy in zebrafish.
- Coxsackievirus B3 induces crosstalk between autophagy and apoptosis to benefit its release after replicating in autophagosomes through a mechanism involving caspase cleavage of autophagy-related proteins.
- Circadian and noncircadian modulation of autophagy in photoreceptors and retinal pigment epithelium.
- Autophagy restricts Chlamydia trachomatis growth in human macrophages via IFNG-inducible guanylate binding proteins.
- Induction of autophagy is essential for monocyte-macrophage differentiation.
- Arsenic trioxide enhances the radiation sensitivity of androgen-dependent and -independent human prostate cancer cells.
- Expression pattern and functions of autophagy-related gene atg5 in zebrafish organogenesis.
- Critical role for hyperpolarization-activated cyclic nucleotide-gated channel 2 in the AIF-mediated apoptosis.
- The class IA phosphatidylinositol 3-kinase p110-beta subunit is a positive regulator of autophagy.
- Therapeutic potential of a synthetic lethal interaction between the MYC proto-oncogene and inhibition of aurora-B kinase.
- Immunohistochemical evidence for macroautophagy in neurones and endothelial cells in Alzheimer's disease.
- Oxidative modification sensitizes mitochondrial apoptosis-inducing factor to calpain-mediated processing.
- Biochemical isolation and characterization of the tubulovesicular LC3-positive autophagosomal compartment.
- Control of basal autophagy by calpain1 mediated cleavage of ATG5.
- Lysosomal-associated protein multispanning transmembrane 5 gene (LAPTM5) is associated with spontaneous regression of neuroblastomas.
- A novel protein complex in membrane rafts linking the NR2B glutamate receptor and autophagy is disrupted following traumatic brain injury.
- Association of autophagy defect with a malignant phenotype and poor prognosis of hepatocellular carcinoma.