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LC3 Antibody (APG8A) (N-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1801A

Product Information

Application	WB, IF, IHC-P, E
Primary Accession	Q9H492, Q9GZQ8
Reactivity	Human, Rat, Mouse
Predicted	Bovine, Canine, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	14272
Antigen Region	1-30

Additional Information

Gene ID	84557
Other Names	Microtubule-associated proteins 1A/1B light chain 3A, Autophagy-related protein LC3 A, Autophagy-related ubiquitin-like modifier LC3 A, MAP1 light chain 3-like protein 1, MAP1A/MAP1B light chain 3 A, MAP1A/MAP1B LC3 A, Microtubule-associated protein 1 light chain 3 alpha, MAP1LC3A
Target/Specificity	This LC3 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1~30 amino acids from the N-term of human LC3 (APG8a).
Dilution	WB~~1:1000 IF~~1:10~50 IHC-P~~1:100~500 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	LC3 Antibody (APG8A) (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MAP1LC3A
Function	Ubiquitin-like modifier involved in formation of autophagosomal vacuoles

	(autophagosomes) (PubMed:20713600, PubMed:24290141). While LC3s are involved in elongation of the phagophore membrane, the GABARAP/GATE-16 subfamily is essential for a later stage in autophagosome maturation (PubMed:20713600). Through its interaction with the reticulophagy receptor TEX264, participates in the remodeling of subdomains of the endoplasmic reticulum into autophagosomes upon nutrient stress, which then fuse with lysosomes for endoplasmic reticulum turnover (PubMed:31006537, PubMed:31006538).
Cellular Location	Cytoplasmic vesicle, autophagosome membrane; Lipid-anchor. Endomembrane system; Lipid-anchor. Cytoplasm, cytoskeleton {ECO:0000250|UniProtKB:Q91VR7}. Note=LC3-II binds to the autophagic membranes.
Tissue Location	Most abundant in heart, brain, liver, skeletal muscle and testis but absent in thymus and peripheral blood leukocytes

Background

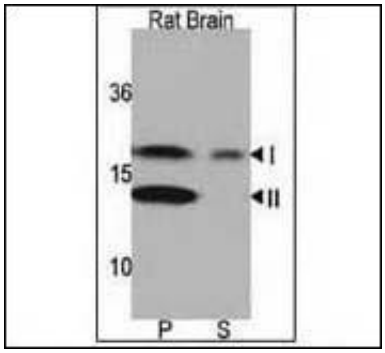
Macroautophagy is the major inducible pathway for the general turnover of cytoplasmic constituents in eukaryotic cells, it is also responsible for the degradation of active cytoplasmic enzymes and organelles during nutrient starvation. Macroautophagy involves the formation of double-membrane bound autophagosomes 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). MAP1A and MAP1B are microtubule-associated proteins which mediate the physical interactions between microtubules and components of the cytoskeleton. These proteins are involved in formation of autophagosomal vacuoles (autophagosomes). MAP1A and MAP1B each consist of a heavy chain subunit and multiple light chain subunits. MAP1LC3a is one of the light chain subunits and can associate with either MAP1A or MAP1B. The precursor molecule is cleaved by APG4B/ATG4B to form the cytosolic form, LC3-I. This is activated by APG7L/ATG7, transferred to ATG3 and conjugated to phospholipid to form the membrane-bound form, LC3-II.

References

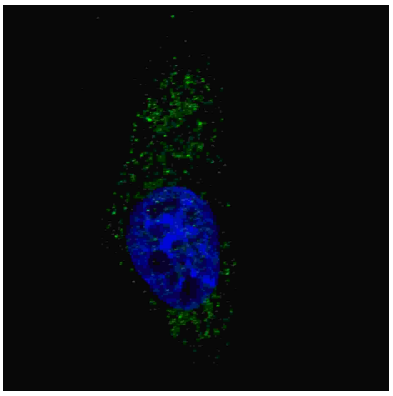
References for protein:
1.Baehrecke EH. Nat Rev Mol Cell Biol. 6(6):505-10. (2005)
2.Lum JJ, et al. Nat Rev Mol Cell Biol. 6(6):439-48. (2005)
3.Greenberg JT. Dev Cell. 8(6):799-801. (2005)
4.Levine B. Cell. 120(2):159-62. (2005)
5.Shintani T and Klionsky DJ. Science. 306(5698):990-5. (2004)
6.Tanida I., et al. Int. J. Biochem. Cell Biol. 36:2503-2518(2004)
7.He H., et al. J. Biol. Chem. 278:29278-29287(2003)
8.Tanida I., et al. J. Biol. Chem. 279:36268-36276(2004)
References for U251 cell line:
1. Westermark B.; Pontén J.; Hugosson R. (1973).” Determinants for the establishment of permanent tissue culture lines from human gliomas”. Acta Pathol Microbiol Scand A. 81:791-805. [PMID: 4359449].
2. Pontén, J.,Westermark B. (1978).” Properties of Human Malignant Glioma Cells in Vitro”. Medical Biology 56: 184-193.[PMID: 359950].
3. Geng Y.;Kohli L.; Klocke B.J.; Roth K.A.(2010). “Chloroquine-induced autophagic vacuole accumulation and cell death in glioma cells is p53 independent”. Neuro Oncol. 12(5): 473–481.[PMID: 20406898].

Images

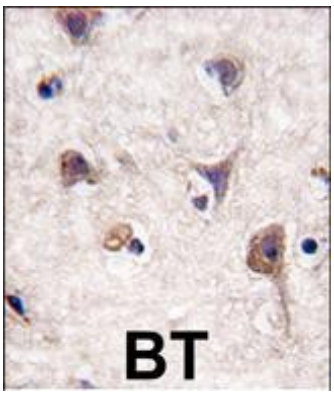
Western blot analysis of anti-LC3 (APG8a) Pab (Cat.



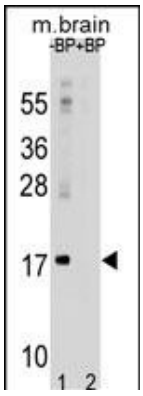
#AP1801a) in rat brain lysate. Both lipidated (arrow, II) and non-lipidated APG8a (arrow, I) were detected in membrane fraction (P) but only non-lipidated LC3 was detected in soluble fraction (S).



Fluorescent image of U251 cells stained with AP1801a LC3 (APG8A) (N-term) antibody. U251 cells were treated with Chloroquine (50 µM,16h), then fixed with 4% PFA (20 min), permeabilized with Triton X-100 (0.2%, 30 min). Cells were then incubated with AP1801a LC3 (APG8A) (N-term) primary antibody (1:200, 2 h at room temperature). For secondary antibody, Alexa Fluor® 488 conjugated donkey anti-rabbit antibody (green) was used (1:1000, 1h). Nuclei were counterstained with Hoechst 33342 (blue) (10 µg/ml, 5 min). LC3 immunoreactivity is localized to autophagic vacuoles in the cytoplasm of U251 cells.



Formalin-fixed and paraffin-embedded human brain tissue reacted with Autophagy LC3 Antibody (APG8a) (N-term), 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.



APG8a (MAP1LC3A) Antibody (M1) (Cat. #AP1801a) western blot analysis in mouse brain tissue lysates (35ug/lane).This demonstrates the APG8a (MAP1LC3A) antibody detected the APG8a (MAP1LC3A) protein (arrow).

Citations

- Induction of Autophagic Death of Human Hepatocellular Carcinoma Cells by Armillaridin from .
- Baicalein Induces Autophagy and Apoptosis through AMPK Pathway in Human Glioma Cells.
- Forkhead box protein o3 transcription factor negatively regulates autophagy in human cancer cells by inhibiting forkhead box protein o1 expression and cytosolic accumulation.
- Bach1 deficiency reduces severity of osteoarthritis through upregulation of heme oxygenase-1.
- Frontal white matter hyperintensities, clasmatodendrosis and gliovascular abnormalities in ageing and post-stroke dementia.

- Hyaluronan coated cerium oxide nanoparticles modulate CD44 and reactive oxygen species expression in human fibroblasts.
- Honokiol inhibits in vitro and in vivo growth of oral squamous cell carcinoma through induction of apoptosis, cell cycle arrest and autophagy.
- DOWNREGULATED APOPTOSIS AND AUTOPHAGY AFTER ANTI-Aβ IMMUNOTHERAPY IN ALZHEIMER'S DISEASE.
- Procyanidins from Vitis vinifera seeds induce apoptotic and autophagic cell death via generation of reactive oxygen species in squamous cell carcinoma cells.
- Midazolam regulated caspase pathway, endoplasmic reticulum stress, autophagy, and cell cycle to induce apoptosis in MA-10 mouse Leydig tumor cells.
- The role of tetraspanin CD9 in osteoarthritis using three different mouse models.
- A High Concentration of Genistein Induces Cell Death in Human Uterine Leiomyoma Cells by Autophagy.
- Lmx1a and Lmx1b regulate mitochondrial functions and survival of adult midbrain dopaminergic neurons.
- Autophagy protects neuron from Abeta-induced cytotoxicity.
- Autophagy enhances the presentation of endogenous viral antigens on MHC class I molecules during HSV-1 infection.
- Chondrocyte autophagy is stimulated by HIF-1 dependent AMPK activation and mTOR suppression.
- Superoxide is the major reactive oxygen species regulating autophagy.
- Dual inhibition of akt/mammalian target of rapamycin pathway by nanoparticle albumin-bound-rapamycin and perifosine induces antitumor activity in multiple myeloma.
- Chloroquine-induced autophagic vacuole accumulation and cell death in glioma cells is p53 independent.
- Immunohistochemical evidence for macroautophagy in neurones and endothelial cells in Alzheimer's disease.
- c-Abl and Arg tyrosine kinases regulate lysosomal degradation of the oncoprotein Galectin-3.
- Inhibition of isoprenylcysteine carboxylmethyltransferase induces autophagic-dependent apoptosis and impairs tumor growth.
- Heavy ion irradiation induces autophagy in irradiated C2C12 myoblasts and their bystander cells.
- The melanoma-associated transmembrane glycoprotein Gpnmb controls trafficking of cellular debris for degradation and is essential for tissue repair.
- Identification and anti-human glioblastoma activity of tagitinin C from Tithonia diversifolia methanolic extract.
- IGF-I stimulates Rab7-RILP interaction during neuronal autophagy.
- Overexpression of the autophagic beclin-1 protein clears mutant ataxin-3 and alleviates Machado-Joseph disease.
- Expression of LC3 and Beclin 1 in the spinal dorsal horn following spinal nerve ligation-induced neuropathic pain.

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