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GABARAP Antibody (N-term)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1821a

Product Information

Application	WB, IHC-P, IF, IHC-P-Leica, E
Primary Accession	O95166
Other Accession	P60517, Q8MK68, Q9DCD6, Q9GJW7
Reactivity	Human, Mouse, Rat
Predicted	Mouse, Rat, Rabbit, Bovine, Canine, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	13918
Antigen Region	1-30

Additional Information

Gene ID	11337
Other Names	Gamma-aminobutyric acid receptor-associated protein, GABA(A) receptor-associated protein, MM46, GABARAP, FLC3B
Target/Specificity	This GABARAP antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1-30 amino acids of human GABARAP.
Dilution	WB~~1:1000 IHC-P~~1:100~500 IF~~1:10~50 IHC-P-Leica~~1:500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
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	GABARAP Antibody (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	GABARAP {ECO:0000303|PubMed:34597140, ECO:0000312|HGNC:HGNC:4067}
Function	Ubiquitin-like modifier that plays a role in intracellular transport of GABA(A) receptors and its interaction with the cytoskeleton (PubMed:9892355).

	Involved in autophagy: 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:15169837, PubMed:20562859, PubMed:22948227, PubMed:34597140). 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:31006538). Participates in selective ER-phagy through interaction with UBAC2, promoting recruitment of UBAC2-associated ER fragments to autophagosomes (PubMed:39284914). In addition to autophagy, also regulates lysosome biogenesis via interaction with FNIP1 (or FNIP2): interaction sequesters the FLCN-FNIP complex and prevents non-canonical mTORC1 signaling cascade activation, leading to activation of transcription factors TFEB and TFE3 (PubMed:39423796, PubMed:34597140). Also required for the local activation of the CUL3(KBTBD6/7) E3 ubiquitin ligase complex, regulating ubiquitination and degradation of TIAM1, a guanyl-nucleotide exchange factor (GEF) that activates RAC1 and downstream signal transduction (PubMed:25684205). Thereby, regulates different biological processes including the organization of the cytoskeleton, cell migration and proliferation (PubMed:25684205). Involved in apoptosis (PubMed:15977068).
Cellular Location	Cytoplasmic vesicle, autophagosome membrane. Endomembrane system {ECO:0000250|UniProtKB:P60517}. Cytoplasm, cytoskeleton {ECO:0000250|UniProtKB:P60517}. Golgi apparatus membrane {ECO:0000250|UniProtKB:P60517}. Cytoplasmic vesicle {ECO:0000250|UniProtKB:P60517}. Note=Largely associated with intracellular membrane structures including the Golgi apparatus and postsynaptic cisternae. Colocalizes with microtubules (By similarity) Also localizes to discrete punctae along the ciliary axoneme (By similarity). {ECO:0000250|UniProtKB:P60517, ECO:0000250|UniProtKB:Q9DCD6}
Tissue Location	Heart, brain, placenta, liver, skeletal muscle, kidney and pancreas.

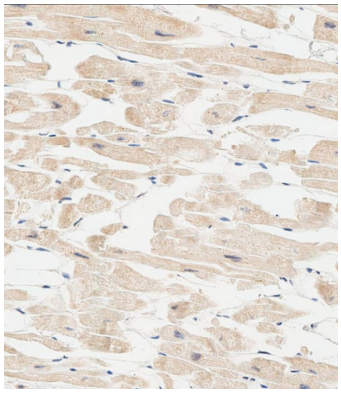
Background

Gamma-aminobutyric acid A receptors [GABA(A) receptors] are ligand-gated chloride channels that mediate inhibitory neurotransmission. GABARAP is GABA(A) receptor-associated protein, which is highly positively charged in its N-terminus and shares sequence similarity with light chain-3 of microtubule-associated proteins 1A and 1B. This protein clusters neurotransmitter receptors by mediating interaction with the cytoskeleton.

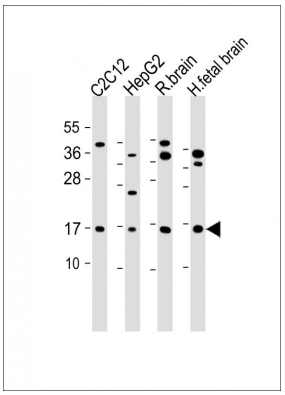
References

References for protein:
1.Nemos, C., et al., Brain Res. Mol. Brain Res. 119(2):216-219 (2003).
2.Stangler, T., et al., J. Biol. Chem. 277(16):13363-13366 (2002).
3.Knight, D., et al., J. Biol. Chem. 277(7):5556-5561 (2002).
4.Tanida, I., et al., J. Biol. Chem. 277(16):13739-13744 (2002).
5.Harris, R., et al., J. Biomol. NMR 21(2):185-186 (2001).
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].

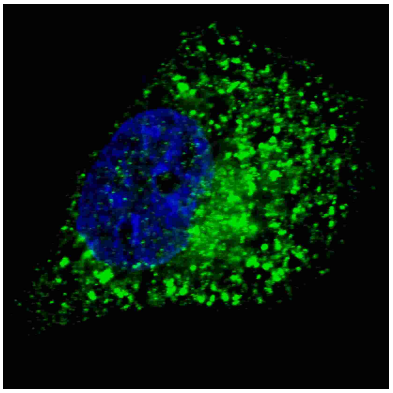
Images



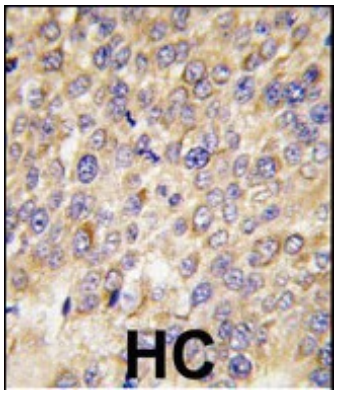
Immunohistochemical analysis of paraffin-embedded human heart tissue using AP1821a performed on the Leica® BOND RXm. Samples were incubated with primary antibody(1/500) for 1 hours at room temperature. A undiluted biotinylated CRF Anti-Polyvalent HRP Polymer antibody was used as the secondary antibody.



All lanes : Anti-Autophagy GABARAP Antibody (N-term) at 1:8000 dilution Lane 1: C2C12 whole cell lysate Lane 2: HepG2 whole cell lysate Lane 3: rat brain lysate Lane 4: human fetal brain lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 14 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Fluorescent image of U251 cells stained with GABARAP (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 AP1821a GABARAP (N-term) primary antibody (1:500, 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). GABARAP immunoreactivity is localized to autophagic vacuoles in the cytoplasm of U251 cells.



Formalin-fixed and paraffin-embedded human hepatocarcinoma tissue reacted with Autophagy GABARAP Antibody (N-term)(Cat.#AP1821a), 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.

Citations

- A conserved ATG2-GABARAP family interaction is critical for phagophore formation
- Selective autophagy maintains centrosome integrity and accurate mitosis by turnover of centriolar satellites.
- Lentiviral-Mediated shRNA Approaches: Applications in Cellular Differentiation and Autophagy.
- Molecular determinants regulating selective binding of autophagy adapters and receptors to ATG8 proteins.
- ATG9A shapes the forming autophagosome through Arfaptin 2 and phosphatidylinositol 4-kinase IIIβ.
- Recycling endosomal CD133 functions as an inhibitor of autophagy at the pericentrosomal region.
- Autophagy Pathway Mapping to Elucidate the Function of Novel Autophagy Regulators Identified by High-Throughput Screening.
- Small Molecule Inhibition of the Autophagy Kinase ULK1 and Identification of ULK1 Substrates.
- Induction of autophagy is a key component of all-trans-retinoic acid-induced differentiation in leukemia cells and a potential target for pharmacologic modulation.
- Centriolar Satellites Control GABARAP Ubiquitination and GABARAP-Mediated Autophagy.
- K63-Linked Ubiquitination Targets Toxoplasma gondii for Endo-lysosomal Destruction in IFNγ-Stimulated Human Cells.
- Phosphorylation of the LIR Domain of SCOC Modulates ATG8 Binding Affinity and Specificity

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