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ULK1 Antibody

Catalog # ASC11653

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	O75385
Other Accession	NP_003556, 4507831
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	112631
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	ULK1 Antibody can be used for detection of ULK1 by Western blot at 1 □g/mL.

Additional Information

Gene ID	8408
Other Names	Serine/threonine-protein kinase ULK1, 2.7.11.1, Autophagy-related protein 1 homolog, ATG1, hATG1, Unc-51-like kinase 1, ULK1, KIAA0722
Target/Specificity	ULK1; Two alternatively spliced transcript variants encoding different isoforms have been identified. ULK1 antibody is predicted to not cross-react with ULK2.
Reconstitution & Storage	ULK1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	ULK1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ULK1 {ECO:0000303|PubMed:9693035, ECO:0000312|HGNC:HGNC:12558}
Function	Serine/threonine-protein kinase involved in autophagy in response to starvation (PubMed:18936157, PubMed:21460634, PubMed:21795849, PubMed:23524951, PubMed:25040165, PubMed:29487085, PubMed:31123703). Acts upstream of phosphatidylinositol 3-kinase PIK3C3 to regulate the formation of autophagophores, the precursors of autophagosomes (PubMed:18936157, PubMed:21460634, PubMed:21795849, PubMed:25040165, PubMed:39384743). Part of regulatory feedback loops in autophagy: acts both as a downstream effector and negative regulator of mammalian target of rapamycin complex 1 (mTORC1) via interaction with RPTOR (PubMed:21795849). Activated via phosphorylation by AMPK and also acts as a regulator of AMPK by mediating phosphorylation of AMPK subunits PRKAA1, PRKAB2 and PRKAG1, leading to negatively regulate AMPK activity

	(PubMed:21460634). May phosphorylate ATG13/KIAA0652 and RPTOR; however such data need additional evidence (PubMed:18936157). Plays a role early in neuronal differentiation and is required for granule cell axon formation (PubMed:11146101). Also phosphorylates SESN2 and SQSTM1 to regulate autophagy (PubMed:25040165, PubMed:37306101). Phosphorylates FLCN, promoting autophagy (PubMed:25126726). Phosphorylates AMBRA1 in response to autophagy induction, releasing AMBRA1 from the cytoskeletal docking site to induce autophagosome nucleation (PubMed:20921139). Phosphorylates ATG4B, leading to inhibit autophagy by decreasing both proteolytic activation and delipidation activities of ATG4B (PubMed:28821708).
Cellular Location	Cytoplasm, cytosol. Preautophagosomal structure. Note=Under starvation conditions, is localized to puncate structures primarily representing the isolation membrane that sequesters a portion of the cytoplasm resulting in the formation of an autophagosome.
Tissue Location	Ubiquitously expressed. Detected in the following adult tissues: skeletal muscle, heart, pancreas, brain, placenta, liver, kidney, and lung

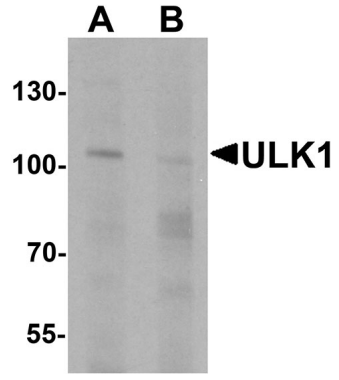
Background

ULK1 Antibody: ULK1, also known as ATG1, is a key serine/threonine protein kinase probably acting at the most upstream step of autophagosome formation. Knockout of ULK1 results in a severe defect in the autophagy pathway. ULK1 is highly conserved among eukaryotes, and are the Unc-51-like kinases, ULK1 and ULK2 in mammals. ULK1 is ubiquitously expressed and involved in autophagy in response to starvation. It is the target of the TOR kinase signaling pathway that regulates autophagy through the control of phosphorylation status of ATG13. ULK1 also plays a role early in neuronal differentiation.

References

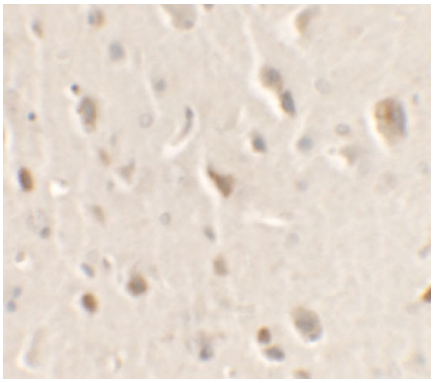
Suzuki K, Kubota Y, Sekito T, et al. Hierarchy of Atg proteins in pre-autophagosomal structure organization. Genes to Cells 2007; 12:209–18.
Lee EJ and Tournier C. The requirement of uncoordinated 51-like kinase 1 (ULK1) and ULK2 in the regulation of autophagy. Autophagy 2011; 7:689-95.
Yan J, Kuroyanagi H, Tomemori T, et al. Mouse ULK2, a novel member of the UNC-51-like protein kinases: unique features of functional domains. Oncogene 1999; 18:5850–9.
Bach M, Larance M, James DE, et al. The serine/threonine kinase ULK1 is a target of multiple phosphorylation events. Biochem. J. 2011; 440:283-91.

Images

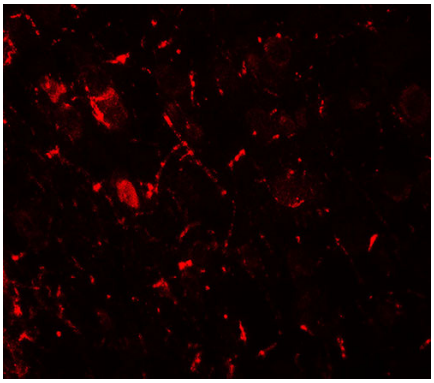


Western blot analysis of ULK1 in rat brain tissue lysate with ULK1 antibody at 1 µg/mL in (A) the absence and (B) the presence of blocking peptide.

Immunohistochemistry of ULK1 in rat brain tissue with



ULK1 antibody at 2.5 µg/ml.



Immunofluorescence of ULK1 in rat brain tissue with ULK1 antibody at 20 µg/ml.

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