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LKB1 Antibody

Catalog # ASC10479

Product Information

Application	WB, E
Primary Accession	Q15831
Other Accession	AAH19334, 17939640
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	48636
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	LKB1 antibody can be used for detection of LKB1 by Western blot at 1 □g/mL. LKB1 often migrates at a higher than expected molecular weight in SDS-PAGE.

Additional Information

Gene ID	6794
Other Names	LKB1 Antibody: PJS, LKB1, hLKB1, PJS, Liver kinase B1, serine/threonine kinase 11
Target/Specificity	STK11;
Reconstitution & Storage	LKB1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	LKB1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	STK11 (HGNC:11389)
Synonyms	LKB1, PJS
Function	Tumor suppressor serine/threonine-protein kinase that controls the activity of AMP-activated protein kinase (AMPK) family members, thereby playing a role in various processes such as cell metabolism, cell polarity, apoptosis and DNA damage response (PubMed:12805220, PubMed:14517248, PubMed:14976552, PubMed:15016379, PubMed:15733851). Acts by phosphorylating the T-loop of AMPK family proteins, thus promoting their activity: phosphorylates PRKAA1, PRKAA2, BRSK1, BRSK2, MARK1, MARK2, MARK3, MARK4, NUAK1, NUAK2, SIK1, SIK2, SIK3 and SNRK but not MELK

	(PubMed:12805220, PubMed:14517248, PubMed:14976552, PubMed:15016379, PubMed:15733851). Also phosphorylates non-AMPK family proteins such as STRADA, PTEN and possibly p53/TP53 (PubMed:11430832, PubMed:15987703). Acts as a key upstream regulator of AMPK by mediating phosphorylation and activation of AMPK catalytic subunits PRKAA1 and PRKAA2 and thereby regulates processes including: inhibition of signaling pathways that promote cell growth and proliferation when energy levels are low, glucose homeostasis in liver, activation of autophagy when cells undergo nutrient deprivation, and B- cell differentiation in the germinal center in response to DNA damage (PubMed:14976552). Also acts as a regulator of cellular polarity by remodeling the actin cytoskeleton (PubMed:15016379). Required for cortical neuron polarization by mediating phosphorylation and activation of BRSK1 and BRSK2, leading to axon initiation and specification (PubMed:14976552). Involved in DNA damage response: interacts with p53/TP53 and recruited to the CDKN1A/WAF1 promoter to participate in transcription activation (PubMed:11430832, PubMed:17108107, PubMed:21317932). Able to phosphorylate p53/TP53; the relevance of such result in vivo is however unclear and phosphorylation may be indirect and mediated by downstream STK11/LKB1 kinase NUAK1 (PubMed:11430832, PubMed:17108107, PubMed:21317932). Also acts as a mediator of p53/TP53-dependent apoptosis via interaction with p53/TP53: translocates to the mitochondrion during apoptosis and regulates p53/TP53-dependent apoptosis pathways (PubMed:11430832, PubMed:17108107, PubMed:21317932). Regulates UV radiation-induced DNA damage response mediated by CDKN1A (PubMed:25329316). In association with NUAK1, phosphorylates CDKN1A in response to UV radiation and contributes to its degradation which is necessary for optimal DNA repair (PubMed:25329316).
Cellular Location	Nucleus. Cytoplasm. Membrane {ECO:0000250|UniProtKB:Q9WTK7} Mitochondrion. Late endosome {ECO:0000250|UniProtKB:Q9WTK7}. Note=A small fraction localizes at membranes (By similarity). Relocates to the cytoplasm when bound to STRAD (STRADA or STRADB) and CAB39/MO25 (CAB39/MO25alpha or CAB39L/MO25beta) (PubMed:18854309). Translocates to the mitochondrion during apoptosis. PTEN promotes cytoplasmic localization (PubMed:11430832). Translocates to late endosomes in response to calorie restriction (By similarity). {ECO:0000250|UniProtKB:Q9WTK7, ECO:0000269|PubMed:11430832, ECO:0000269|PubMed:18854309}
Tissue Location	Ubiquitously expressed. Strongest expression in testis and fetal liver

Background

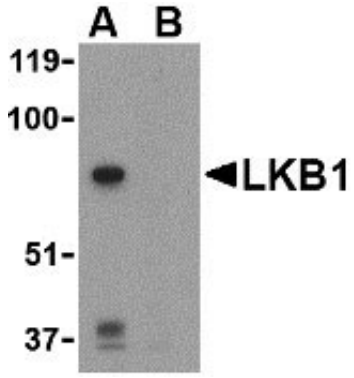
LKB1 Antibody: The LKB1 serine/threonine protein kinase was initially identified as a tumor suppressor gene mutated in human Peutz-Jeghers syndrome (PJS), a condition resulting in the growth of numerous intestinal polyps classed as hamartomas. LKB1 exists as a heterotrimeric complex with two other proteins, Ste20-related adaptor protein (STRAD) and MO25. Together, this complex can phsophorylate and activate the AMP-activate protein kinase (AMPK). Following AMPK activation by LKB1, AMPK then phosphorylates TSC1 and TSC2, key components of the metabolism-regulating TOR signaling pathway, which antagonizes the activation for the TOR pathway. LKB1 has also been shown to play a fundamental role in controlling the spatial orientation of structures required to maintain an ordered, polarized epithelium.

References

Hemminki A, Markie D, Tomlinson I, et al. A serine/threonine kinase gene defective in Peutz-Jeghers syndrome. Nature 1998; 391:184-7.
Boudeau J, Baas AF, Deak M, et al. MO25α/β interact with STRADα/β enhancing their ability to bind, activate and localize LKB1 in the cytoplasm. EMBO J. 2003; 22:5102-14.
Hawley SA, Boudeau J, Reid JL, et al. Complexes between the LKB1 tumor suppressor, STRADα/β and

MO25α/β are upstream kinases in the AMP-activated protein kinase cascade. J. Biol. 2003; 2:28

Images



Western blot analysis of LKB1 in PC-3 cell lysate with LKB1 antibody at 1 µg/mL in the (A) absence or (B) presence of blocking peptide.

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