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Tuberin (TSC2) Antibody (S1798)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP6348D

Product Information

Application	WB, IHC-P, IF, E
Primary Accession	P49815
Reactivity	Human
Predicted	Mouse, Rat, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB13393
Calculated MW	200608
Antigen Region	1776-1805

Additional Information

Gene ID	7249
Other Names	Tuberin, Tuberous sclerosis 2 protein, TSC2, TSC4
Target/Specificity	This Tuberin (TSC2) antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1776-1805 amino acids from human Tuberin (TSC2).
Dilution	WB~~1:2000 IHC-P~~1:100~500 IF~~1:10~50 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	Tuberin (TSC2) Antibody (S1798) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	TSC2 {ECO:0000303|PubMed:7558029, ECO:0000312|HGNC:HGNC:12363}
Function	Catalytic component of the TSC-TBC complex, a multiprotein complex that acts as a negative regulator of the canonical mTORC1 complex, an evolutionarily conserved central nutrient sensor that stimulates anabolic

	reactions and macromolecule biosynthesis to promote cellular biomass generation and growth (PubMed:12172553, PubMed:12271141, PubMed:12842888, PubMed:12906785, PubMed:15340059, PubMed:22819219, PubMed:24529379, PubMed:28215400, PubMed:33436626, PubMed:35772404). Within the TSC-TBC complex, TSC2 acts as a GTPase- activating protein (GAP) for the small GTPase RHEB, a direct activator of the protein kinase activity of mTORC1 (PubMed:12172553, PubMed:12820960, PubMed:12842888, PubMed:12906785, PubMed:15340059, PubMed:22819219, PubMed:24529379, PubMed:33436626). In absence of nutrients, the TSC-TBC complex inhibits mTORC1, thereby preventing phosphorylation of ribosomal protein S6 kinase (RPS6KB1 and RPS6KB2) and EIF4EBP1 (4E-BP1) by the mTORC1 signaling (PubMed:12172553, PubMed:12271141, PubMed:12842888, PubMed:12906785, PubMed:22819219, PubMed:24529379, PubMed:28215400, PubMed:35772404). The TSC-TBC complex is inactivated in response to nutrients, relieving inhibition of mTORC1 (PubMed:12172553, PubMed:24529379). Involved in microtubule-mediated protein transport via its ability to regulate mTORC1 signaling (By similarity). Also stimulates the intrinsic GTPase activity of the Ras- related proteins RAP1A and RAB5 (By similarity).
Cellular Location	Lysosome membrane; Peripheral membrane protein. Cytoplasm, cytosol Note=Recruited to lysosomal membranes in a RHEB-dependent process in absence of nutrients (PubMed:24529379). In response to insulin signaling and phosphorylation by PKB/AKT1, the complex dissociates from lysosomal membranes and relocalizes to the cytosol (PubMed:24529379)
Tissue Location	Liver, brain, heart, lymphocytes, fibroblasts, biliary epithelium, pancreas, skeletal muscle, kidney, lung and placenta.

Background

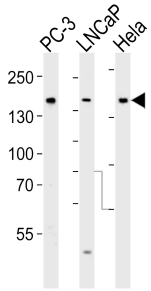
Mutations in TSC2 lead to tuberous sclerosis complex. This protein is believed to be a tumor suppressor and is able to specifically stimulate the intrinsic GTPase activity of the Ras-related protein RAP1A and RAB5. TSC2 associates with hamartin in a cytosolic complex, possibly acting as a chaperone for hamartin. It may have a function in vesicular transport, but may also play a role in the regulation of cell growth arrest and in the regulation of transcription mediated by steroid receptors. Interaction between TSC1 and TSC2 may facilitate vesicular docking.

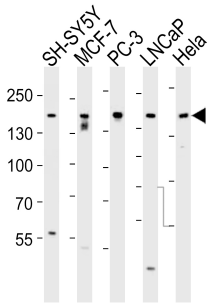
References

Li, Y., et al., Mol. Cell. Biol. 24(18):7965-7975 (2004).
Karbowniczek, M., et al., J. Biol. Chem. 279(29):29930-29937 (2004).
Corradetti, M.N., et al., Genes Dev. 18(13):1533-1538 (2004).
Birchenall-Roberts, M.C., et al., J. Biol. Chem. 279(24):25605-25613 (2004).
Lewis, J.C., et al., J. Med. Genet. 41(3):203-207 (2004).

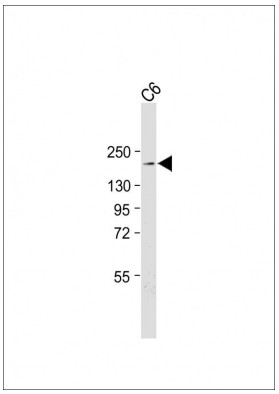
Images

Western blot analysis of lysates from PC-3, LNCaP, Hela cell line (from left to right), using Tuberin (TSC2) Antibody(Cat. #AP6348d). AP6348d was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:5000 dilution was used as the secondary antibody. Lysates at 35ug per lane.

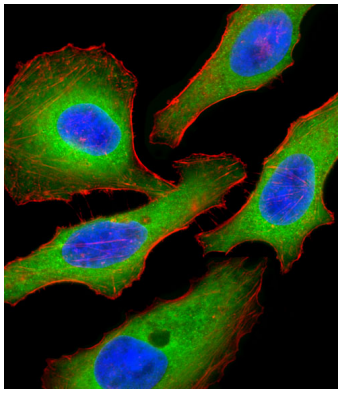




Western blot analysis of lysates from SH-SY5Y, MCF-7, PC-3, LNCaP, Hela, cell line (from left to right), using Tuberin (TSC2) Antibody(Cat. #AP6348d). AP6348d was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:5000 dilution was used as the secondary antibody. Lysates at 35ug per lane.

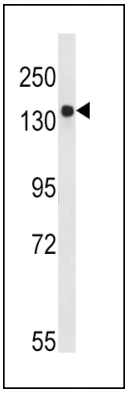


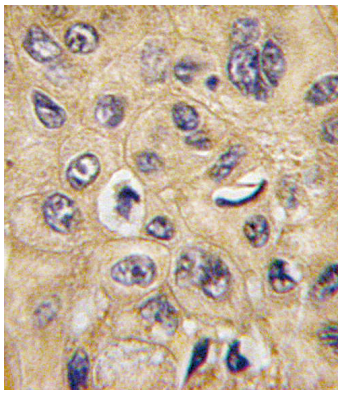
All lanes : Anti-TSC2-S1798/S1799 at 1:500 dilution Lane 1: C6 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ASP1615) at 1/15000 dilution. Observed band size : 200kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Fluorescent confocal image of Hela cell stained with Tuberin (TSC2) Antibody (S1798)(Cat#AP6348d).Hela cells were fixed with 4% PFA (20 min), permeabilized with Triton X-100 (0.1%, 10 min), then incubated with Tuberin (TSC2) primary antibody (1:25, 1 h at 37°C). For secondary antibody, Alexa Fluor® 488 conjugated donkey anti-rabbit antibody (green) was used (1:400, 50 min at 37°C).Cytoplasmic actin was counterstained with Alexa Fluor® 555 (red) conjugated Phalloidin (7units/ml, 1 h at 37°C). Nuclei were counterstained with DAPI (blue) (10 µg/ml, 10 min).Tuberin (TSC2) immunoreactivity is localized to Cytoplasm significantly.

Western blot analysis of TSC2-pS1798 (Cat. #AP6348d) in Ramos cell line lysates (35ug/lane). TSC2 (arrow) was detected using the purified Pab.





Formalin-fixed and paraffin-embedded human hepatocarcinoma tissue reacted with TSC2 Antibody (S1798) (Cat.#AP6348d), 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.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.