10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

Raptor Antibody

Catalog # ASC10309

Product Information

Application	WB, ICC, E
Primary Accession	Q8K4Q0
Other Accession	Q8K4Q0, 46577497
Reactivity	Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	149471
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	Raptor antibody can be used for the detection of Raptor by Western blot at 2 and 4 □g/mL. Antibody can also be used for immunocytochemistry starting at 10 □g/mL.

Additional Information

Other Names	Raptor Antibody: Rap, Raptor, mKIAA1303, 4932417H02Rik, Regulatory-associated protein of mTOR, regulatory associated protein of MTOR, complex 1
Target/Specificity	Rptor; Raptor has multiple isoforms that may also be recognized by antibody.
Reconstitution & Storage	Raptor 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	Raptor Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	Rptor {ECO:0000312|MGI:MGI:1921620}
Function	Component of the mechanistic target of rapamycin complex 1 (mTORC1), an evolutionarily conserved central nutrient sensor that stimulates anabolic reactions and macromolecule biosynthesis to promote cellular biomass generation and growth (PubMed:27879318, PubMed:32912901). In response to nutrients, growth factors or amino acids, mTORC1 is recruited to the lysosome membrane and promotes protein, lipid and nucleotide synthesis by phosphorylating several substrates, such as ribosomal protein S6 kinase (RPS6KB1 and RPS6KB2) and EIF4EBP1 (4E-BP1) (PubMed:27879318). In the same time, it inhibits catabolic pathways by phosphorylating the autophagy

	initiation components ULK1 and ATG13, as well as transcription factor TFEB, a master regulators of lysosomal biogenesis and autophagy (By similarity). The mTORC1 complex is inhibited in response to starvation and amino acid depletion (By similarity). Within the mTORC1 complex, RPTOR acts both as a molecular adapter, which (1) mediates recruitment of mTORC1 to lysosomal membranes via interaction with small GTPases Rag (RagA/RRAGA, RagB/RRAGB, RagC/RRAGC and/or RagD/RRAGD), and a (2) substrate-specific adapter, which promotes substrate specificity by binding to TOS motif-containing proteins and direct them towards the active site of the MTOR kinase domain for phosphorylation (By similarity). mTORC1 complex regulates many cellular processes, such as odontoblast and osteoclast differentiation or neuronal transmission (PubMed:27879318, PubMed:30984011, PubMed:33495318). mTORC1 complex in excitatory neuronal transmission is required for the prosocial behavior induced by the psychoactive substance lysergic acid diethylamide (LSD) (PubMed:33495318).
Cellular Location	Cytoplasm {ECO:0000250|UniProtKB:Q8N122}. Lysosome {ECO:0000250|UniProtKB:Q8N122}. Cytoplasmic granule {ECO:0000250|UniProtKB:Q8N122}. Note=Targeting to lysosomes depends on amino acid availability: recruited to lysosomes via interaction with GTP-bound form of RRAGA (or RRAGB) in complex with the GDP-bound form of RRAGC (or RRAGD), promoting recruitment of mTORC1 to the lysosomes In arsenite-stressed cells, accumulates in stress granules when associated with SPAG5 and association with lysosomes is drastically decreased. {ECO:0000250|UniProtKB:Q8N122}

Background

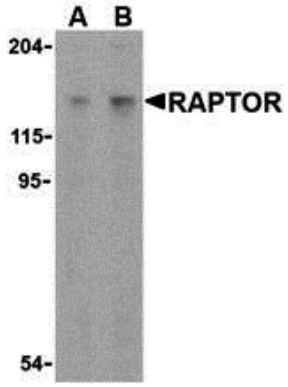
Raptor Antibody: The mammalian Target of Rapamycin (TOR, also known as mTOR) is an evolutionarily conserved serine/threonine kinase that regulates cell growth and cell cycle through its ability to integrate signals from nutrient levels and growth factors. Rapamycin inhibits TOR activity resulting in reduced cell growth and reduced rates of cell cycle and cell proliferation. Raptor (regulatory associated protein of TOR) is a TOR-binding protein essential for TOR signaling in vivo. It acts as a TOR scaffold protein whose binding by TOR substrates is necessary for effective TOR-catalyzed phosphorylation. These substrates include the ribosomal protein S6 kinase (RP S6K) and the eukaryotic initiation factor 4E binding protein 4EBP1, proteins necessary for cell growth and proliferation and responsive to nutrient and mitogen levels. Raptor binds these proteins through a common 5 amino acid TOR-signaling (TOS) motif; mutation of this motif prevents the TOR-dependent phosphorylation of these proteins.

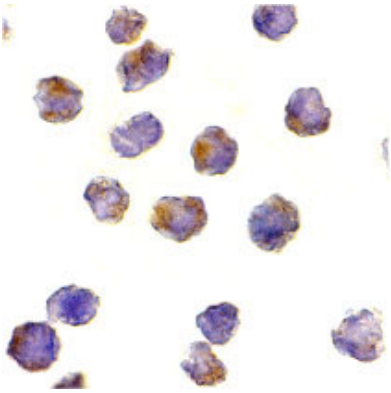
References

Shamji AF, Ngheim P, and Schreiber SL. Integration of growth factor and nutrient signaling: implications for cancer biology. Mol. Cell 2003; 12:271-80.
Fingar DC and Blenis J. Target of rapamycin (TOR): an integrator of nutrient and growth factor signals and coordinator of cell growth and cell cycle progression. Oncogene 2004; 23:3151-71.
Yonezawa K, Tokunaga C, Oshiro N, et al. Raptor, a binding partner of target of rapamycin. Biochem. Biophys. Res. Commun. 2004; 313:437-441.
Hara K, Yonezawa K, Weng QP, et al. Amino acid sufficiency and mTOR regulate p70 S6 kinase and eIF-4E BP1 through a common effector mechanism. J. Biol. Chem. 1998; 273:14484-94.

Images

Western blot analysis of Raptor in L1210 cell lysate with Raptor antibody at (A) 2 and (B) 4 µg/mL.





Immunocytochemistry of Raptor in L1210 cells with Raptor antibody at 10 µg/mL.

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