ARG54454
anti-AMPK alpha 2 antibody

Package: 50 µg
Store at: -20°C

Summary

Product Description	Rabbit Polyclonal antibody recognizes AMPK alpha 2
Tested Reactivity	Hu, Ms, Rat, Bov
Tested Application	WB
Specificity	This affinity-purified antibody reacts with human, mouse, rat and bovine AMPK alpha-2. The epitope recognized is in the region between aa 350 and 400 of AMPK alpha-2. Based on 100% sequence identity, this antibody is predicted to react with Mouse, Rabbit, Guinea pig, Pig, Orangutan, Rhesus Monkey, Gorilla, Chimpanzee, White-tufted-ear marmoset, Crab-eating macaque, African elephant, Chinese hamster, Naked mole rat and Northern white-cheeked gibbon.
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Target Name	AMPK alpha 2
Species	Human
Immunogen	Synthetic peptide representing a portion of the protein encoded within exon 7.
Conjugation	Un-conjugated
Alternate Names	AMPK; Acetyl-CoA carboxylase kinase; ACACA kinase; 5'-AMP-activated protein kinase catalytic subunit alpha-2; EC 2.7.11.31; EC 2.7.11.27; HMGCR kinase; PRKAA; AMPK2; EC 2.7.11.1; AMPK subunit alpha-2; AMPKa2; Hydroxymethylglutaryl-CoA reductase kinase

Application Instructions

Predict Reactivity Note	Mouse, Rabbit, Guinea pig, Pig, Orangutan, Rhesus Monkey, Gorilla, Chimpanzee, White-tufted-ear marmoset, Crab-eating macaque, African elephant, Chinese hamster, Naked mole rat and Northern white-cheeked gibbon.

Application table

Application	Dilution
WB	Assay-dependent

Application Note	* The dilutions indicate recommended starting dilutions and the optimal dilutions or concentrations should be determined by the scientist.
Positive Control	293T

Properties

Form	Liquid
Buffer	Tris citrate/ phosphate (pH 7-8) and 0.09% Sodium azide
Preservative	0.09% Sodium azide
Storage instruction	For continuous use, store undiluted antibody at 2-8°C for up to a week. For long-term storage, aliquot and store at -20°C or below. Storage in frost free freezers is not recommended. Avoid repeated

	freeze/thaw cycles. Suggest spin the vial prior to opening. The antibody solution should be gently mixed before use.
Note	For laboratory research only, not for drug, diagnostic or other use.

Bioinformation

Gene Symbol	PRKAA2
Gene Full Name	protein kinase, AMP-activated, alpha 2 catalytic subunit
Background	AMP-activated protein kinase (AMPK) is a heterotrimeric protein made up of a catalytic alpha subunit, and a regulatory beta and gamma subunit. There are two distinct genes for the alpha subunit, alpha1 and alpha2. AMPK alpha 2 is the serine/threonine kinase catalytic subunit of the AMPK. AMPK is responsible for regulating fatty acid and cholesterol synthesis.
Function	Catalytic subunit of AMP-activated protein kinase (AMPK), an energy sensor protein kinase that plays a key role in regulating cellular energy metabolism. In response to reduction of intracellular ATP levels, AMPK activates energy-producing pathways and inhibits energy-consuming processes: inhibits protein, carbohydrate and lipid biosynthesis, as well as cell growth and proliferation. AMPK acts via direct phosphorylation of metabolic enzymes, and by longer-term effects via phosphorylation of transcription regulators. Also acts as a regulator of cellular polarity by remodeling the actin cytoskeleton; probably by indirectly activating myosin. Regulates lipid synthesis by phosphorylating and inactivating lipid metabolic enzymes such as ACACA, ACACB, GYS1, HMGCR and LIPE; regulates fatty acid and cholesterol synthesis by phosphorylating acetyl-CoA carboxylase (ACACA and ACACB) and hormone-sensitive lipase (LIPE) enzymes, respectively. Regulates insulin-signaling and glycolysis by phosphorylating IRS1, PFKFB2 and PFKFB3. AMPK stimulates glucose uptake in muscle by increasing the translocation of the glucose transporter SLC2A4/GLUT4 to the plasma membrane, possibly by mediating phosphorylation of TBC1D4/AS160. Regulates transcription and chromatin structure by phosphorylating transcription regulators involved in energy metabolism such as CRTC2/TORC2, FOXO3, histone H2B, HDAC5, MEF2C, MLXIPL/ChREBP, EP300, HNF4A, p53/TP53, SREBF1, SREBF2 and PPARGC1A. Acts as a key regulator of glucose homeostasis in liver by phosphorylating CRTC2/TORC2, leading to CRTC2/TORC2 sequestration in the cytoplasm. In response to stress, phosphorylates 'Ser-36' of histone H2B (H2BS36ph), leading to promote transcription. Acts as a key regulator of cell growth and proliferation by phosphorylating TSC2, RPTOR and ATG1/ULK1: in response to nutrient limitation, negatively regulates the mTORC1 complex by phosphorylating RPTOR component of the mTORC1 complex and by phosphorylating and activating TSC2. In response to nutrient limitation, promotes autophagy by phosphorylating and activating ATG1/ULK1. AMPK also acts as a regulator of circadian rhythm by mediating phosphorylation of CRY1, leading to destabilize it. May regulate the Wnt signaling pathway by phosphorylating CTNNB1, leading to stabilize it. Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1. Plays an important role in the differential regulation of pro-autophagy (composed of PIK3C3, BECN1, PIK3R4 and UVRAG or ATG14) and non-autophagy (composed of PIK3C3, BECN1 and PIK3R4) complexes, in response to glucose starvation. Can inhibit the non-autophagy complex by phosphorylating PIK3C3 and can activate the pro-autophagy complex by phosphorylating BECN1 (By similarity). [UniProt]
Research Area	Cancer antibody; Cell Biology and Cellular Response antibody; Metabolism antibody; Neuroscience antibody; Signaling Transduction antibody; AMPK-ACC pathway antibody
Calculated Mw	62 kDa
PTM	Ubiquitinated. Phosphorylated at Thr-172 by STK11/LKB1 in complex with STE20-related adapter-alpha (STRADA) pseudo kinase and CAB39. Also phosphorylated at Thr-172 by CAMKK2; triggered by a rise in intracellular calcium ions, without detectable changes in the AMP/ATP ratio. CAMKK1 can also phosphorylate Thr-172, but at much lower level. Dephosphorylated by protein phosphatase 2A and 2C (PP2A and PP2C). Phosphorylated by ULK1; leading to negatively regulate AMPK activity and suggesting the existence of a regulatory feedback loop between ULK1 and AMPK. Dephosphorylated by PPM1A and PPM1B at Thr-172 (mediated by STK11/LKB1).