ARG54453
anti-AMPK alpha 1 antibody

Package: 50 µg
Store at: -20°C

Summary

Product Description	Rabbit Polyclonal antibody recognizes AMPK alpha 1
Tested Reactivity	Hu, Ms, Rat, Bov
Tested Application	IHC-P, WB
Specificity	This antibody reacts with human, mouse, rat and bovine AMP activated protein kinase, alpha-1 catalytic subunit. Based on 100% sequence identity, this antibody is predicted to react with Chicken, Turkey, Dog, Horse, Rabbit, Guinea pig, Pig, Panda, Orangutan, Rhesus Monkey, Gorilla, Chimpanzee, West Indian ocean coelacanth, Medaka fish, Nile tilapia, Duckbill platypus and Three-spined stickleback. Antibody is affinity purified.
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Target Name	AMPK alpha 1
Species	Human
Immunogen	Synthetic peptide representing a portion of the protein encoded within exon 8.
Conjugation	Un-conjugated
Alternate Names	AMPK; Acetyl-CoA carboxylase kinase; ACACA kinase; EC 2.7.11.26; EC 2.7.11.31; 5'-AMP-activated protein kinase catalytic subunit alpha-1; EC 2.7.11.27; HMGCR kinase; Tau-protein kinase PRKAA1; EC 2.7.11.1; Hydroxymethylglutaryl-CoA reductase kinase; AMPKa1; AMPK subunit alpha-1

Application Instructions

Predict Reactivity Note	Chicken, Turkey, Dog, Horse, Rabbit, Guinea pig, Pig, Panda, Orangutan, Rhesus Monkey, Gorilla, Chimpanzee, West Indian ocean coelacanth, Medaka fish, Nile tilapia, Duckbill platypus and Three-spined stickleback.

Application table

Application	Dilution
IHC-P	Assay-dependent
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	Bovine aortic endothelial cells, Rat aortic smooth muscle cells, HepG2 cells and Human aorticendothelial cells.

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	PRKAA1
Gene Full Name	protein kinase, AMP-activated, alpha 1 catalytic subunit
Background	AMP-activated protein kinase (AMPK) is a heterotrimeric protein made up of a catalytic alpha subunit and regulatory beta and gamma subunits. There are two distinct genes for the alpha subunit, alpha1 and alpha2. AMPK alpha 1 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 has tau-protein kinase activity: in response to amyloid beta A4 protein (APP) exposure, activated by CAMKK2, leading to phosphorylation of MAPT/TAU; however the relevance of such data remains unclear in vivo. Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1. [UniProt]
Research Area	Cancer antibody; Cell Biology and Cellular Response antibody; Metabolism antibody; Neuroscience antibody; Signaling Transduction antibody; AMPK-ACC pathway antibody
Calculated Mw	64 kDa
PTM	Ubiquitinated. Phosphorylated at Thr-183 by STK11/LKB1 in complex with STE20-related adapter-alpha (STRADA) pseudo kinase and CAB39. Also phosphorylated at Thr-183 by CAMKK2; triggered by a rise in intracellular calcium ions, without detectable changes in the AMP/ATP ratio. CAMKK1 can also phosphorylate Thr-183, but at a much lower level. Dephosphorylated by protein phosphatase 2A and 2C (PP2A and PP2C). Phosphorylated by ULK1 and ULK2; leading to negatively regulate AMPK activity and suggesting the existence of a regulatory feedback loop between ULK1, ULK2 and AMPK. Dephosphorylated by PPM1A and PPM1B.