

Rabbit AMPK alpha Polyclonal Antibody | anti-PRKAA1 antibody

Phospho-AMPK alpha (Thr172) Antibody

CATALOG #	HOST	REACTIVITY	APPLICATIONS
AAA321713	Rabbit	Human, Mouse, Rat	ELISA, Immunocytochemistry, Immunofluorescence, Immunohistochemistry, Western Blot

PRODUCT SYNONYMS

AMPK alpha; Polyclonal Antibody; Phospho-AMPK alpha (Thr172) Antibody; 5 AMP activated protein kinase alpha 1catalytic subunit; 5 AMP activated protein kinase catalytic alpha 1 chain; 5' AMP activated protein kinase catalytic subunit alpha 1; 5'-AMP-activated protein kinase catalytic subunit alpha-1; AAPK1; AAPK1_HUMAN; ACACA kinase; acetyl CoA carboxylase kinase; AI194361; AI450832; AL024255; AMP-activate kinase alpha 1 subunit; AMP-activated protein kinase; catalytic; alpha-1; AMPK 1; AMPK alpha 1; AMPK alpha 1 chain; AMPK; AMPK subunit alpha-1; AMPK1; AMPKa1; AMPKalpha1; C130083N04Rik; cb116; EC 2.7.11.1; HMG CoA reductase kinase; HMGCR kinase; hormone sensitive lipase kinase; Hydroxymethylglutaryl CoA reductase kinase; im:7154392; kinase AMPK alpha1; MGC33776; MGC57364; OTTHUMP00000161795; OTTHUMP00000161796; PRKAA 1; PRKAA1; Protein kinase AMP activated alpha 1 catalytic subunit; SNF1-like protein AMPK; SNF1A; Tau protein kinase PRKAA1; wu:fa94c10; 5'-AMP-activated protein kinase catalytic subunit alpha-2; AAPK2_HUMAN; Acetyl-CoA carboxylase kinase; AMPK alpha 2 chain; AMPK subunit alpha-2; AMPK2; AMPKa2; AMPKalpha2; Hydroxymethylglutaryl-CoA reductase kinase; PRKAA; PRKAA2; Protein kinase AMP activated alpha 2 catalytic subunit; Protein kinase AMP activated catalytic subunit alpha 2; anti-PRKAA1 antibody

PRODUCT SPECIFICATIONS

Host	Rabbit
Reactivity	Human, Mouse, Rat
Clonality	Polyclonal
Isotype	IgG
Specificity	Phospho-AMPK alpha (Thr172) antibody detects endogenous levels of AMPK alpha only when phosphorylated at Threonine 172
Purity/Purification	From purified rabbit serum by affinity purification via sequential chromatography on phospho-and non-phospho-peptide affinity columns.
Form/Format	Liquid Phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Concentration	1mg/ml (varies by lot)
Sequence Length	559
Applicable Applications for anti-PRKAA1 antibody	ELISA, ICC (Immunocytochemistry), IF (Immunofluorescence), IHC (Immunohistochemistry), WB (Western Blot)
Immunogen	A synthesized peptide derived from human AMPK alpha around the phosphorylation site of Threonine 172
Subcellular Location	Nucleus
Predicted Cross Reactivity	Pig, Zebrafish, Bovine, Sheep, Rabbit, Dog, Chicken, Xenopus
Similarity	Pig (100%), Zebrafish (100%), Bovine (100%), Sheep (100%), Rabbit (100%), Dog (100%), Chicken (100%), Xenopus (100%)
Conjugation	Unconjugated
Epitope	Phospho Thr172
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.



IHC (Immunohistochemistry)
Phospho-AMPK alpha (Thr172) Antibody for IHC in human colon.



IF (Immunofluorescence)
af3423 staining C2C12 cells by ICC/IF. Cells were fixed with PFA and permeabilized in 0.1% saponin prior to blocking in 10% serum for 45 minutes at 37 degree C. The primary antibody was diluted 1/400 and incubated with the sample for 1 hour at 37 degree C. A Alexa Fluor 594 conjugated goat polyclonal to rabbit IgG (H+L), diluted 1/600 was used as secondary antibody.



WB (Western Blot)
Western blot analysis of AMPK alpha phosphorylation expression in Heatshock treated 293 whole cell lysates, The lane on the left is treated with the antigen-specific peptide.



IF (Immunofluorescence)
AAA321713 staining 293 by IF/ICC. The sample were fixed with PFA and permeabilized in 0.1% Triton X-100, then blocked in 10% serum for 45 minutes at 25 degree C. The primary antibody was diluted at 1/200 and incubated with the sample for 1 hour at 37 degree C. An Alexa Fluor 594 conjugated goat anti-rabbit IgG (H+L) Ab, diluted at 1/600, was used as the secondary antibody.

ADDITIONAL INFORMATION

Related Product Information for anti-PRKAA1 antibody	Description: AMPKA2 a protein kinase of the CAMKL family. The holoenzyme consists of a catalytic subunit (alpha) and two regulatory subunits (beta, gamma). 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. In response to nutrient limitation, phosphorylates transcription factor FOXO3 promoting FOXO3 mitochondrial import (By similarity). 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, EEZF2K, KLC1, NOS3 and SLC12A1. Subunit Structure: AMPK is a heterotrimer of an alpha catalytic subunit (PRKAA1 or PRKAA2), a beta (PRKAB1 or PRKAB2) and a gamma non-catalytic subunits (PRKAG1, PRKAG2 or PRKAG3). Interacts with FNIP1 and FNIP2. Post-translational Modifications: 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. Similarity: The AIS (autoinhibitory sequence) region shows some sequence similarity with the ubiquitin-associated domains and represses kinase activity. Belongs to the protein kinase superfamily. CAMK Ser/Thr protein kinase family. SNF1 subfamily.
References	Zhang F, Xie J, Wang G, Zhang G, Yang H; Journal: J Cell Physiol. Anti-osteoporosis activity of Sanguinarine in preosteoblast MC3T3-E1 cells and an ovariectomized rat model. Deng Z, Luo P, Lai W, Song T, Peng J, Wei HK; Journal: Biochem Biophys Res Commun. Myostatin inhibits eEF2K-eEF2 by regulating AMPK to suppress protein synthesis. Huang X, Li X, Xie X, Ye F, Chen B, Song C, Tang H, Xie X; Journal: Breast. High expressions of LDHA and AMPK as prognostic biomarkers for breast cancer. Li M, Li J, Zeng R, Yang J, Liu J, Zhang Z, Song X, Yao Z, Ma C, Li W, Wang K, Wei L; Journal: J Virol. Respiratory Syncytial Virus Replication Is Promoted by Autophagy-Mediated Inhibition of Apoptosis. Li X, Liu Y, Ma H, Guan Y, Cao Y, Tian Y, Zhang Y; Journal: Front Physiol. Enhancement of Glucose Metabolism via PGC-1α Participates in the Cardioprotection of Chronic Intermittent Hypobaric Hypoxia.

NCBI AND UNIPROT INFORMATION

NCBI GI #	94557301
NCBI GeneID	5562
NCBI Accession #	NP_006242.5
NCBI GenBank Nucleotide #	NM_006251.5
UniProt Accession #	Q13131; O00286; Q5D0E1; Q86VS1; Q9UNQ4; A8MTQ6; B2R7E1

Molecular Weight	Observed: 62 kDa Predicted: 65 kDa
NCBI Official Full Name	5'-AMP-activated protein kinase catalytic subunit alpha-1 isoform 1
NCBI Official Synonym Full Names	protein kinase AMP-activated catalytic subunit alpha 1
NCBI Official Symbol	PRKAA1
NCBI Official Synonym Symbols	AMPK; AMPKa1
NCBI Protein Information	5'-AMP-activated protein kinase catalytic subunit alpha-1
UniProt Protein Name	5'-AMP-activated protein kinase catalytic subunit alpha-1
UniProt Gene Name	PRKAA1
UniProt Synonym Gene Names	AMPK1; AMPK subunit alpha-1; ACACA kinase; HMGCR kinase

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Small volumes of product may become entrapped in the seal of the vial during shipment and storage; if necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the cap.

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