PRKAA2 Antibody – Rabbit Polyclonal

PRODUCT OVERVIEW

Product Name	PRKAA2, Polyclonal Antibody
Full Product Name	PRKAA2 Conjugated Antibody
Product Gene Name	anti-PRKAA2 antibody
Product Synonym Names	AMPK; AMPK2; PRKAA; AMPKa2
Clonality	Polyclonal
Host	Rabbit
Species Reactivity	Human
Form/Format	0.01M Sodium Phosphate, 0.25M NaCl, pH 7.6, 5mg/ml Bovine Serum Albumin, 0.02% Sodium Azide
Specificity	The antibody detects endogenous levels of total PRKAA2 protein.
Preparation and Storage	Store at 4 degree C for 6 months.
Molecular Weight	48kDa
OMIM	600497
3D Structure	ModBase 3D Structure for P54646
Immunogen	Fusion protein corresponding to a region derived from internal residues of human protein kinase, AMP-activated, alpha 2 catalytic subunit
Conjugation	Biotin AF350 AF405 AF488 AF555 AF594 AF647 AF680 AF750
Excitation Emission	AF350: 346nm/442nm
Applications Tested/Suitable for anti-PRKAA2 antibody	Most Applications
Application Notes for anti-PRKAA2 antibody	Suggested Dilution: AF350 conjugated: most applications: 1:50-1:250 AF405 conjugated: most applications: 1:50-1:250 AF488 conjugated: most applications: 1:50-1:250 AF555 conjugated: most applications: 1:50-1:250 AF594 conjugated: most applications: 1:50-1:250 AF647 conjugated: most applications: 1:50-1:250 AF680 conjugated: most applications: 1:50-1:250 AF750 conjugated: most applications: 1:50-1:250 Biotin conjugated: working with enzyme-conjugated streptavidin, most applications: 1:50-1:1000
Related Product Information for anti-PRKAA2 antibody	The protein encoded by this gene is a catalytic subunit of the AMP-activated protein kinase (AMPK). AMPK is a heterotrimer consisting of an alpha catalytic subunit, and non-catalytic beta and gamma subunits. AMPK is an important energy-sensing enzyme that monitors cellular energy status. In response to cellular metabolic stresses, AMPK is activated, and thus phosphorylates and inactivates acetyl-CoA carboxylase (ACC) and beta-hydroxy beta-methylglutaryl-CoA reductase (HMGCR), key enzymes involved in regulating de novo biosynthesis of fatty acid and cholesterol. Studies of the mouse counterpart suggest that this catalytic subunit may control whole-body insulin sensitivity and is necessary for maintaining myocardial energy homeostasis during ischemia.
Other Notes	Small volumes of anti-PRKAA2 antibody vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.

Searchable Terms for PRKAA2 purchase	MBS9446560 is an antibody targeting PRKAA2. Also known as PRKAA2 Conjugated Antibody. Reactive in Human. Host: Rabbit.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for PRKAA2. It may not necessarily be applicable to this product.

NCBI GI #	47481294
NCBI GeneID	5563
NCBI Accession #	BC069680
UniProt Primary Accession #	P54646
UniProt Related Accession #	P54646
NCBI Official Full Name	Homo sapiens protein kinase, AMP-activated, alpha 2 catalytic subunit, mRNA
NCBI Official Synonym Full Names	protein kinase AMP-activated catalytic subunit alpha 2
NCBI Official Symbol	PRKAA2
NCBI Official Synonym Symbols	AMPK; AMPK2; PRKAA; AMPKa2
UniProt Protein Name	5'-AMP-activated protein kinase catalytic subunit alpha-2
UniProt Synonym Protein Names	Acetyl-CoA carboxylase kinase (EC:2.7.11.27); ACACA kinase; Hydroxymethylglutaryl-CoA reductase kinase (EC:2.7.11.31); HMGCR kinase
UniProt Gene Name	PRKAA2
UniProt Synonym Gene Names	AMPK; AMPK2; AMPK subunit alpha-2; ACACA kinase; HMGCR kinase
UniProt Entry Name	AAPK2_HUMAN
NCBI Protein Information	5'-AMP-activated protein kinase catalytic subunit alpha-2

UniProt Comments for PRKAA2	AMPKA2: a catalytic subunit of AMP-activated protein kinase (AMPK). Acts as an energy sensor, playing a key role in regulating cellular energy metabolism. A protein kinase of the CAMKL family whose activation is regulated by the balance between ADP/AMP/ATP, and intracellular Ca(2+) levels. Acts as a metabolic stress-sensing protein kinase switching off biosynthetic pathways when cellular ATP levels are depleted and when 5'-ADP and -AMP rise in response to fuel limitation and/or hypoxia. Activates energy-producing pathways and inhibits energy-consuming processes. Restores ATP levels in cells by switching off anabolic and switching on catabolic pathways. Activated primarily by rising ADP levels and not, as previously thought, solely by AMP. AMPK resembles an adenylate charge regulatory system in which anabolic and catabolic pathways are regulated by adenine nucleotide ratios. Acts via direct phosphorylation of metabolic enzymes and transcription regulators. Regulates fatty acid synthesis by phosphorylating acetyl-CoA carboxylase. Regulates cholesterol synthesis by phosphorylating and inactivating hormone-sensitive lipase and hydroxymethylglutaryl-CoA reductase. Activated by at least two distinct upstream kinases: the tumor suppressor LKB1 and CaMKK2. Also acts as a regulator of cellular polarity by remodeling the actin cytoskeleton, probably by indirectly activating myosin. AMPK is a heterotrimer of an alpha catalytic subunit (AMPKA1 or -2), a beta (AMPKB1 or -2) and a gamma non-catalytic subunit (AMPKG1, -2 or -3). Different possible combinations of subunits give rise to 12 different holoenzymes. Binding of ADP or AMP to non-catalytic gamma subunit (PRKAG1, -2 or -3) results in allosteric activation. AMPK is activated by antihyperglycemic drug metformin, a drug prescribed to patients with type 2 diabetes: in vivo, metformin seems to mainly inhibit liver gluconeogenesis. However, metformin can be used to activate AMPK in muscle and other cells in culture or ex vivo. Selectively inhibited by compound C (6-[4-(2-Piperidin-1-yl-ethoxy)-phenyl)]-3-pyridin-4-yl-pyyrazolo[1,5-a] pyrimidine. Activated by resveratrol, a natural polyphenol present in red wine, and S17834, a synthetic polyphenol. Salicylate/aspirin directly activates kinase activity. Studies in the mouse suggest that AMPK2 may control whole-body insulin sensitivity and is necessary for maintaining myocardial energy homeostasis during ischemia. Protein type: Protein kinase, Ser/Thr (non-receptor); EC 2.7.11.27; EC 2.7.11.1; Kinase, protein; Autophagy; Protein kinase, CAMK; EC 2.7.11.31; CAMK group; CAMKL family; AMPK subfamily Chromosomal Location of Human Ortholog: 1p31 Cellular Component: nucleoplasm; cytosol Molecular Function: AMP-activated protein kinase activity; protein serine/threonine kinase activity; protein binding; metal ion binding; [acetyl-CoA carboxylase] kinase activity; protein serine/threonine/tyrosine kinase activity; chromatin binding; histone serine kinase activity; ATP binding; protein kinase activity; [hydroxymethylglutaryl-CoA reductase (NADPH)] kinase activity Biological Process: lipid biosynthetic process; rhythmic process; cellular lipid metabolic process; carnitine shuttle; glucose homeostasis; signal transduction; protein amino acid phosphorylation; cellular response to glucose starvation; cellular response to nutrient levels; regulation of fatty acid biosynthetic process; regulation of transcription, DNA-dependent; response to stress; cell cycle arrest; positive regulation of autophagy; fatty acid biosynthetic process; mitochondrion organization and biogenesis; negative regulation of TOR signaling pathway; Wnt receptor signaling pathway; transcription, DNA-dependent; organelle organization and biogenesis; regulation of circadian rhythm; cholesterol biosynthetic process; fatty acid homeostasis; positive regulation of glycolysis; insulin receptor signaling pathway; energy reserve metabolic process; autophagy; negative regulation of apoptosis
Research Articles on PRKAA2	**1.** A double-negative feedback loop between Akt and AMPK controls the switch between matrix-attached and matrix-detached states needed to coordinate cell growth and survival during breast cancer metastasis.
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