Datasheet for ABIN7563815

PRKAA1 Protein (AA 1-559) (His tag)

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Overview

Quantity:	1 mg
Target:	PRKAA1
Protein Characteristics:	AA 1-559
Origin:	Mouse
Source:	HEK-293 Cells
Protein Type:	Recombinant
Purification tag / Conjugate:	This PRKAA1 protein is labelled with His tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS)

Product Details

Purpose:	Custom-made recombinat Prkaa1 Protein expressed in mammalien cells.
Sequence:	MRRLSSWRKM ATAEKQKHDG RVKIGHYILG DTLGVGTFGK VKVGKHELTG HKVAVKILNR QKIRSLDVVG KIRREIQNLK LFRHPHIIKL YQVISTPSDI FMVMEYVSGG ELFDYICKNG RLDEKESRRL FQQILSGVDY CHRHMVVHRD LKPENVLLDA HMNAKIADFG LSNMMSDGEF LRTSCGSPNY AAPEVISGRL YAGPEVDIWS SGVILYALLC GTLPFDDDHV PTLFKKICDG IFYTPQYLNP SVISLLKHML QVDPMKRAAI KDIREHEWFK QDLPKYLFPE DPSYSSTMID DEALKEVCEK FECSEEEVLS CLYNRNHQDP LAVAYHLIID NRRIMNEAKD FYLATSPPDS FLDDHHLTRP HPERVPFLVA ETPRARHTLD ELNPQKSKHQ GVRKAKWHLG IRSQSRPNDI MAEVCRAIKQ LDYEWKVVNP YYLRVRRKNP VTSTFSKMSL QLYQVDSRTY LLDFRSIDDE ITEAKSGTAT PQRSGSISNY RSCQRSDSDA EAQGKPSDVS LTSSVTSLDS SPVDVAPRPG SHTIEFFEMC ANLIKILAQ **Sequence without tag. The proposed Purification-Tag is based on experiences with the expression system, a different complexity of the protein could make**

Product Details

	another tag necessary. In case you have a special request, please contact us.
Characteristics:	Key Benefits: • Made to order protein - from design to production - by highly experienced protein experts. • Protein expressed in mammalien cells and purified in one-step affinity chromatography • The optimized expression system ensures reliability for intracellular, secreted and transmembrane proteins. • State-of-the-art algorithm used for plasmid design (Gene synthesis). This protein is a made-to-order protein and will be made for the first time for your order. Our experts in the lab try to ensure that you receive soluble protein. If you are not interested in a full length protein, please contact us for individual protein fragments. The big advantage of ordering our made-to-order proteins in comparison to ordering custom made proteins from other companies is that there is no financial obligation in case the protein cannot be expressed or purified.
Purity:	> 90 % as determined by Bis-Tris Page, Western Blot
Grade:	custom-made

Target Details

Target:	PRKAA1
Alternative Name:	Prkaa1 (PRKAA1 Products)
Background:	5'-AMP-activated protein kinase catalytic subunit alpha-1 (AMPK subunit alpha-1) (EC 2.7.11.1) (Acetyl-CoA carboxylase kinase) (ACACA kinase) (Hydroxymethylglutaryl-CoA reductase kinase) (HMGCR kinase) (EC 2.7.11.31) (Tau-protein kinase PRKAA1) (EC 2.7.11.26),FUNCTION: Catalytic subunit of AMP-activated protein kinase (AMPK), an energy sensor protein kinase that plays a key role in regulating cellular energy metabolism (By similarity). 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 (By similarity). AMPK acts via direct phosphorylation of metabolic enzymes, and by longer-term effects via phosphorylation of transcription regulators (By similarity). 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 (PubMed:15878856). Promotes lipolysis of lipid droplets by mediating phosphorylation of isoform 1 of CHKA (CHKalpha2) (PubMed:34077757). Regulates insulin-signaling and glycolysis by phosphorylating IRS1, PFKFB2 and PFKFB3 (By similarity). 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 (PubMed:16804075, PubMed:16804077). 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 (PubMed:16148943, PubMed:16308421, PubMed:20647423, PubMed:21459323). Acts as a key regulator of glucose homeostasis in liver by phosphorylating CRTC2/TORC2, leading to CRTC2/TORC2 sequestration in the cytoplasm (PubMed:16148943, PubMed:16308421). In response to stress, phosphorylates 'Ser-36' of histone H2B (H2BS36ph), leading to promote transcription (PubMed:20647423). Acts as a key regulator of cell growth and proliferation by phosphorylating FNIP1, TSC2, RPTOR, WDR24 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 (PubMed:18439900, PubMed:21258367, PubMed:21205641, PubMed:32912901). Also phosphorylates and inhibits GATOR2 subunit WDR24 in response to nutrient limitation, leading to suppress glucose-mediated mTORC1 activation (By similarity). In response to energetic stress, phosphorylates FNIP1, inactivating the non-canonical mTORC1 signaling, thereby promoting nuclear translocation of TFEB and TFE3, and inducing transcription of lysosomal or autophagy genes (By similarity). In response to nutrient limitation, promotes autophagy by phosphorylating and activating ATG1/ULK1 (PubMed:21258367, PubMed:21205641). In that process also activates WDR45/WIPI4 (By similarity). Phosphorylates CASP6, thereby preventing its autoprocessing and subsequent activation (By similarity). In response to nutrient limitation, phosphorylates transcription factor FOXO3 promoting FOXO3 mitochondrial import (PubMed:23283301). Also acts as a regulator of cellular polarity by remodeling the actin cytoskeleton, probably by indirectly activating myosin (By similarity). AMPK also acts as a regulator of circadian rhythm by mediating phosphorylation of CRY1, leading to destabilize it (PubMed:19833968). May regulate the Wnt signaling pathway by phosphorylating CTNNB1, leading to stabilize it (PubMed:20361929). 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 (By similarity). Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1 (By similarity). Regulates hepatic lipogenesis. Activated via SIRT3, represses sterol regulatory element-binding protein (SREBP) transcriptional

Target Details

	activities and ATP-consuming lipogenesis to restore cellular energy balance. {ECO:0000250|UniProtKB:P54645, ECO:0000250|UniProtKB:Q13131, ECO:0000269|PubMed:15878856, ECO:0000269|PubMed:16148943, ECO:0000269|PubMed:16308421, ECO:0000269|PubMed:16804075, ECO:0000269|PubMed:16804077, ECO:0000269|PubMed:18439900, ECO:0000269|PubMed:19833968, ECO:0000269|PubMed:20361929, ECO:0000269|PubMed:20647423, ECO:0000269|PubMed:21205641, ECO:0000269|PubMed:21258367, ECO:0000269|PubMed:21459323, ECO:0000269|PubMed:23283301, ECO:0000269|PubMed:32912901, ECO:0000269|PubMed:34077757, ECO:0000269|PubMed:36804859}.
Molecular Weight:	63.9 kDa
UniProt:	Q5EG47
Pathways:	AMPK Signaling, Carbohydrate Homeostasis, Regulation of Carbohydrate Metabolic Process, Warburg Effect

Application Details

Application Notes:	In addition to the applications listed above we expect the protein to work for functional studies as well. As the protein has not been tested for functional studies yet we cannot offer a guarantee though.
Restrictions:	For Research Use only

Handling

Format:	Liquid
Buffer:	The buffer composition is at the discretion of the manufacturer.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	12 months