Datasheet for ABIN3136256

PRKAA2 Protein (AA 1-552) (Strep Tag)

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Overview

Quantity:	1 mg
Target:	PRKAA2
Protein Characteristics:	AA 1-552
Origin:	Mouse
Source:	Tobacco (Nicotiana tabacum)
Protein Type:	Recombinant
Purification tag / Conjugate:	This PRKAA2 protein is labelled with Strep Tag.
Application:	ELISA, Western Blotting (WB), SDS-PAGE (SDS)

Product Details

Sequence:	MAEKQKHDGR VKIGHYVLGD TLGVGTFGKV KIGEHQLTGH KVAVKILNRQ KIRSLDVVGK IKREIQNLKL FRHPHIIKLY QVISTPTDFF MVMEYVSGGE LFDYICKHGR VEEVEARRLF QQILSAVDYC HRHMVVHRDL KPENVLLDAQ MNAKIADFGL SNMMSDGEFL RTSCGSPNYA APEVISGRLY AGPEVDIWSC GVILYALLCG TLPFDDEHVP TLFKKIRGGV FYIPDYLNRS VATLLMHMLQ VDPLKRATIK DIREHEWFKQ DLPSYLFPED PSYDANVIDD EAVKEVCEKF ECTESEVMNS LYSGDPQDQL AVAYHLIIDN RRIMNQASEF YLASSPPSGS FMDDSAMHIP PGLKPHPERM PPLIADSPKA RCPLDALNTT KPKSLAVKKA KWHLGIRSQS KACDIMAEVY RAMKQLGFEW KVVNAYHLRV RRKNPVTGNY VKMSLQLYLV DSRSYLLDFK SIDDEVVEQR SGSSTPQRSC SAAGLHRARS SFDSSTAENH SLSGSLTGSL TGSTLSSASP RLGSHTMDFF EMCASLITAL AR **Sequence without tag. The proposed Strep-Tag is based on experience s with the expression system, a different complexity of the protein could make another tag necessary. In case you**

have a special request, please contact us.

Characteristics:

Key Benefits:

- Made in Germany - from design to production - by highly experienced protein experts.
- Protein expressed with ALiCE® and purified by multi-step, protein-specific process to ensure correct folding and modification.
- These proteins are normally active (enzymatically functional) as our customers have reported (not tested by us and not guaranteed).
- 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 will ensure that you receive a correctly folded protein.

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.

Expression System:

- ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from Nicotiana tabacum c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications.
- During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!

Concentration:

- The concentration of our recombinant proteins is measured using the absorbance at 280nm.
- The protein's absorbance will be measured in several dilutions and is measured against its specific reference buffer.
- We use the Expasy's protparam tool to determine the absorption coefficient of each protein.

Purification:

Two step purification of proteins expressed in Almost Living Cell-Free Expression System (ALiCE®):

1. In a first purification step, the protein is purified from the cleared cell lysate using StrepTag capture material. Eluate fractions are analyzed by SDS-PAGE.

Product Details

	2. Protein containing fractions of the best purification are subjected to second purification step through size exclusion chromatography. Eluate fractions are analyzed by SDS-PAGE and Western blot.
Purity:	≥ 80 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.
Endotoxin Level:	Low Endotoxin less than 1 EU/mg (< 0.1 ng/mg)

Target Details

Target:	PRKAA2
Alternative Name:	Prkaa2 (PRKAA2 Products)
Background:	5'-AMP-activated protein kinase catalytic subunit alpha-2 (AMPK subunit alpha-2) (EC 2.7.11.1) (Acetyl-CoA carboxylase kinase) (ACACA kinase) (Hydroxymethylglutaryl-CoA reductase kinase) (HMGCR kinase) (EC 2.7.11.31),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:15331533, PubMed:15561936). 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). Involved in insulin receptor/INSR internalization (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:21454484, PubMed:20647423, PubMed:21459323, PubMed:17609368). 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). 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 acts as a regulator of cellular polarity by remodeling the actin cytoskeleton, probably by indirectly activating myosin (By similarity). Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1 (By similarity). 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 (PubMed:23332761). Can inhibit the non-autophagy complex by phosphorylating PIK3C3 and can activate the pro-autophagy complex by phosphorylating BECN1 (PubMed:23332761). Upon glucose starvation, promotes ARF6 activation in a kinase-independent manner leading to cell migration (By similarity). Upon glucose deprivation mediates the phosphorylation of ACSS2 at 'Ser-659', which exposes the nuclear localization signal of ACSS2, required for its interaction with KPNA1 and nuclear translocation (By similarity). {ECO:0000250|UniProtKB:P54646, ECO:0000250|UniProtKB:Q09137, ECO:0000269|PubMed:15331533, ECO:0000269|PubMed:15561936, ECO:0000269|PubMed:16148943, ECO:0000269|PubMed:16308421, ECO:0000269|PubMed:16804075, ECO:0000269|PubMed:16804077, ECO:0000269|PubMed:17609368, 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:21454484, ECO:0000269|PubMed:21459323, ECO:0000269|PubMed:23332761, ECO:0000269|PubMed:32912901,

Target Details

	ECO:0000269|PubMed:34077757}.
Molecular Weight:	62.0 kDa
UniProt:	Q8BRK8
Pathways:	AMPK Signaling, Carbohydrate Homeostasis, Chromatin Binding, 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.
Comment:	ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from Nicotiana tabacum c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications. During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!
Restrictions:	For Research Use only

Handling

Format:	Liquid
Buffer:	The buffer composition is at the discretion of the manufacturer. If you have a special request, please contact us.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	Unlimited (if stored properly)