

Datasheet for ABIN3088403

**PRKAA2 Protein (AA 1-552) (His tag)**[Go to Product page](#)**1** Image

## Overview

Quantity:	1 mg
Target:	PRKAA2
Protein Characteristics:	AA 1-552
Origin:	Human
Source:	Insect Cells
Protein Type:	Recombinant
Purification tag / Conjugate:	This PRKAA2 protein is labelled with His tag.
Application:	ELISA, Western Blotting (WB), SDS-PAGE (SDS), Crystallization (Crys)

## Product Details

Sequence: MAEKQKHDGR VKIGHYVLGD TLGVGTFGKV KIGEHQLTGH KVAVKILNRQ KIRSLDVVGK  
IKREIQNLKL FRHPHIKLY QVISTPTDFF MVMEYVSGGE LFDYICKHGR VEEMEARRLF  
QQILSAVDYC HRHMVVHRDL KPENVLLDAH MNAKIADFG LSNMMSDGEFL RTSCGSPNYA  
APEVISGRLY AGPEVDIWSC GVILYALLCG TLPFDDEHVP TLFKKIRGGV FYIPEYLNRS  
VATLLMHMLQ VDPLKRATIK DIREHEWFKQ DLPSYLPED PSYDANVIDD EAVKEVCEKF  
ECTESEVMNS LYSGDPQDQL AVAYHLIDN RRIMNQASEF YLASSPPSGS FMDDSAMHIP  
PGLKPHPERM PPLIADSPKA RCPLDALNTT KPKSLAVKKA KWHLGIRSQS KPYDIMAENV  
RAMKQLDFEW KVVNAYHLRV RRKNPVTGNY VKMSLQLYLV DNRSYLLDFK SIDDEVVEQR  
SGSSTPQRSC SAAGLHRPRS SFDSTTAESH SLGSLTGSL TGSTLSSVSP RLGSHMTDFF  
EMCASLITTL AR

**Sequence without tag. Tag location is at the discretion of the manufacturer. If you have a special request, please contact us.**

## Product Details

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- Characteristics:
- Made in Germany - from design to production - by highly experienced protein experts.
  - Human PRKAA2 Protein (raised in Insect Cells) purified by multi-step, protein-specific process to ensure crystallization grade.
  - 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.

In the unlikely event that the protein cannot be expressed or purified we do not charge anything (other companies might charge you for any performed steps in the expression process for custom-made proteins, e.g. fees might apply for the expression plasmid, the first expression experiments or purification optimization).

When you order this made-to-order protein you will only pay upon receipt of the correctly folded protein. With no financial risk on your end you can rest assured that our experienced protein experts will do everything to make sure that you receive the protein you ordered.

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.

The concentration of the protein is calculated using its specific absorption coefficient. We use the Expasy's protparam tool to determine the absorption coefficient of each protein.

- Purification:
- Two step purification of proteins expressed in baculovirus infected SF9 insect cells:
1. In a first purification step, the protein is purified from the cleared cell lysate using three different His-tag capture materials: high yield, EDTA resistant, or DTT resistant. Eluate fractions are analyzed by SDS-PAGE.
  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: >95 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.

Sterility: 0.22 µm filtered

Endotoxin Level: Protein is endotoxin free.

Grade: Crystallography grade

## Target Details

Target: PRKAA2

Alternative Name: PRKAA2 ([PRKAA2 Products](#))

Background: 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. Involved in insulin receptor/INSR internalization (PubMed:25687571). 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 phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1. 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. Can inhibit the non-autophagy complex by phosphorylating PIK3C3 and can activate the pro-autophagy complex by phosphorylating BECN1 (By similarity). {ECO:0000250|UniProtKB:Q8BRK8, ECO:0000269|PubMed:11518699,

## Target Details

ECO:0000269|PubMed:11554766, ECO:0000269|PubMed:12519745,  
ECO:0000269|PubMed:14651849, ECO:0000269|PubMed:15866171,  
ECO:0000269|PubMed:17486097, ECO:0000269|PubMed:17711846,  
ECO:0000269|PubMed:18184930, ECO:0000269|PubMed:20074060,  
ECO:0000269|PubMed:20160076, ECO:0000269|PubMed:21205641,  
ECO:0000269|PubMed:25687571, ECO:0000269|PubMed:7959015}.

Molecular Weight: 63.3 kDa Including tag.

UniProt: [P54646](#)

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: In cases in which it is highly likely that the recombinant protein with the default tag will be insoluble our protein lab may suggest a higher molecular weight tag (e.g. GST-tag) instead to increase solubility. We will discuss all possible options with you in detail to assure that you receive your protein of interest.

Restrictions: For Research Use only

## Handling

Format: Liquid

Buffer: 100 mM NaCl, 20 mM Hepes, 10% glycerol. pH value 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: Unlimited (if stored properly)



**Image 1.** „Crystallography Grade“ protein due to multi-step, protein-specific purification process