

Datasheet for ABIN3092247

**EIF2AK1 Protein (AA 1-630) (Strep Tag)**[Go to Product page](#)**1** Image

## Overview

Quantity:	1 mg
Target:	EIF2AK1
Protein Characteristics:	AA 1-630
Origin:	Human
Source:	Tobacco (Nicotiana tabacum)
Protein Type:	Recombinant
Purification tag / Conjugate:	This EIF2AK1 protein is labelled with Strep Tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA

## Product Details

Sequence:	<p>MQGGNSGVRK REEEGDGAGA VAAPPAIDFP AEGPDPEYDE SDVPAEIQVL KEPLQQPTFP FAVANQLLLV SLLEHLSHVH EPNPLRSRQV FKLLCQTFIK MGLLSSFTCS DEFSSRLRHH NRAITHLMRS AKERVQRDPC EDISRIQKIR SREVALEAQT SRYLNEFEEL AILGKGGYGR VYKVRNKLDG QYYAIKKILI KGATKTVCMK VLREVKVLAG LQHPNIVGYH TAWIEHVVHI QPRADRAAIE LPSLEVLSDQ EEDREQCGVK NDESSSSSII FAEPTPEKEK RFGESDTENQ NNKSVKYTTN LVIRESGELE STLELQENGL AGLSASSIVE QQLPLRRNSH LEESFTSTEE SSEENVNFLG QTEAQYHML HIQMQLCELS LWDWIVERNK RGREYVDESA CPYVMANVAT KIFQELVEGV FYIHNMGIVH RDLKPRNIFL HGPDQQVKIG DFGLACTDIL QKNTDWTNRN GKRTPTHTSR VGTCLYASPE QLEGSEYDAK SDMYSLGVVL LELFQPFgte MERAELVTGL RTGQLPESLR KRCPVQAKYI QHLTRRNSSQ RPSAIQLLQS ELFQNSGNVN LTLQMKIIEQ EKEIAELKKQ LNLLSQDKGV RDDGKDGGVG</p>
-----------	--

**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

Product Details

- capture material. 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:	>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)
Grade:	Crystallography grade

Target Details

Target:	EIF2AK1
Alternative Name:	EIF2AK1 ( <a href="#">EIF2AK1 Products</a> )
Background:	<p>Eukaryotic translation initiation factor 2-alpha kinase 1 (EC 2.7.11.1) (Heme-controlled repressor) (HCR) (Heme-regulated eukaryotic initiation factor eIF-2-alpha kinase) (Heme-regulated inhibitor) (hHRI) (Hemin-sensitive initiation factor 2-alpha kinase),FUNCTION: Metabolic-stress sensing protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) in response to various stress conditions (PubMed:32132706, PubMed:32132707, PubMed:37327776). Key activator of the integrated stress response (ISR) required for adaptation to various stress, such as heme deficiency, oxidative stress, osmotic shock, mitochondrial dysfunction and heat shock (PubMed:32132706, PubMed:32132707, PubMed:37327776). EIF2S1/eIF-2-alpha phosphorylation in response to stress converts EIF2S1/eIF-2-alpha in a global protein synthesis inhibitor, leading to a global attenuation of cap-dependent translation, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activator ATF4, and hence allowing ATF4-mediated reprogramming (PubMed:32132706, PubMed:32132707, PubMed:37327776). Acts as a key sensor of heme-deficiency: in normal conditions, binds hemin via a cysteine thiolate and histidine nitrogenous coordination, leading to inhibit the protein kinase activity (By similarity). This binding occurs with moderate affinity, allowing it to sense the heme concentration within the cell: heme depletion relieves inhibition and stimulates kinase activity, activating the ISR (By similarity). Thanks to this unique heme-sensing capacity, plays a crucial role to shut off protein synthesis during acute heme-deficient conditions (By similarity). In red blood cells (RBCs), controls hemoglobin synthesis ensuring a coordinated regulation of the synthesis of its heme and globin moieties (By similarity). It thereby plays an essential protective role for RBC survival in anemias of iron deficiency (By similarity). Iron deficiency also triggers activation by full-length DELE1 (PubMed:37327776). Also activates the</p>

## Target Details

ISR in response to mitochondrial dysfunction: HRI/EIF2AK1 protein kinase activity is activated upon binding to the processed form of DELE1 (S-DELE1), thereby promoting the ATF4-mediated reprogramming (PubMed:32132706, PubMed:32132707). {ECO:0000250|UniProtKB:Q9Z2R9, ECO:0000269|PubMed:32132706, ECO:0000269|PubMed:32132707, ECO:0000269|PubMed:32197074}.

Molecular Weight: 71.1 kDa

UniProt: [Q9BQI3](#)

Pathways: [Hepatitis C](#)

## 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.

## Handling

---

Expiry Date: Unlimited (if stored properly)

## Images

---



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