

Product datasheet

Anti-AMPK alpha 2 (phospho S491) antibody [EPR3052] - BSA and Azide free ab232519

Recombinant **RabMAb**

[1 Image](#)

Overview

Product name	Anti-AMPK alpha 2 (phospho S491) antibody [EPR3052] - BSA and Azide free
Description	Rabbit monoclonal [EPR3052] to AMPK alpha 2 (phospho S491) - BSA and Azide free
Host species	Rabbit
Specificity	ab232519 only detects AMPK alpha 2 phosphorylated at Serine 491.
Tested applications	Suitable for: WB
Species reactivity	Reacts with: Mouse, Rat, Human
Immunogen	Synthetic peptide within Human AMPK alpha 2 aa 450-550 (phospho S491). The exact sequence is proprietary. Database link: P54646
Positive control	WB: HEK-293T cell lysate.
General notes	Ab232519 is the carrier-free version of ab109402 . This format is designed for use in antibody labeling, including fluorochromes, metal isotopes, oligonucleotides, enzymes.

Our [carrier-free formats](#) are supplied in a buffer free of BSA, sodium azide and glycerol for higher conjugation efficiency.

Use our [conjugation kits](#) for antibody conjugates that are ready-to-use in as little as 20 minutes with <1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

ab232519 is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm.

Maxpar® is a trademark of Fluidigm Canada Inc.

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to [RabMAb® patents](#).

This product is a [recombinant rabbit monoclonal antibody](#).

Properties

Form Liquid

Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C long term. Avoid freeze / thaw cycle.
Storage buffer	Constituent: PBS
Purity	Protein A purified
Clonality	Monoclonal
Clone number	EPR3052
Isotype	IgG

Applications

Our [Abpromise guarantee](#) covers the use of **ab232519** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
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WB		Use at an assay dependent concentration. Detects a band of approximately 62 kDa (predicted molecular weight: 62 kDa).
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Target

Function

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.

Sequence similarities

Belongs to the protein kinase superfamily. CAMK Ser/Thr protein kinase family. SNF1 subfamily. Contains 1 protein kinase domain.

Domain

The AIS (autoinhibitory sequence) region shows some sequence similarity with the ubiquitin-associated domains and represses kinase activity.

Post-translational modifications

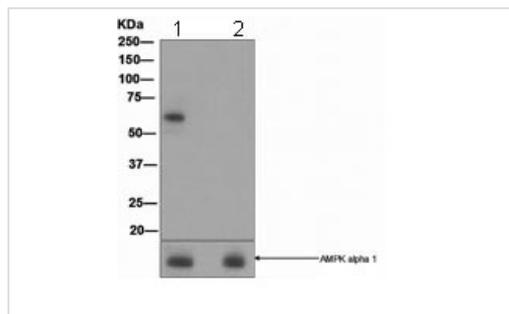
Ubiquitinated.

Phosphorylated at Thr-172 by STK11/LKB1 in complex with STE20-related adapter-alpha (STRADA) pseudo kinase and CAB39. Also phosphorylated at Thr-172 by CAMKK2; triggered by a rise in intracellular calcium ions, without detectable changes in the AMP/ATP ratio. CAMKK1 can also phosphorylate Thr-172, but at much lower level. Dephosphorylated by protein phosphatase 2A and 2C (PP2A and PP2C). Phosphorylated by ULK1; leading to negatively regulate AMPK activity and suggesting the existence of a regulatory feedback loop between ULK1 and AMPK. Dephosphorylated by PPM1A and PPM1B at Thr-172 (mediated by STK11/LKB1).

Cellular localization

Cytoplasm. Nucleus. In response to stress, recruited by p53/TP53 to specific promoters.

Images



Western blot - Anti-AMPK alpha 2 (phospho S491) antibody [EPR3052] - BSA and Azide free (ab232519)

All lanes : Anti-AMPK alpha 2 (phospho S491) antibody [EPR3052] ([ab109402](#)) at 1/1000 dilution

Lane 1 : HEK-293T (human epithelial cell line from embryonic kidney transformed with large T antigen) cell lysate

Lane 2 : HEK-293T cell lysate treated with Lambda Phosphatase (LP)

Lysates/proteins at 10 µg per lane.

Predicted band size: 62 kDa

Observed band size: 62 kDa

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide ([ab109402](#)).

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