

## AMPK alpha 1 monoclonal antibody

Catalog: MB65875

Host: Mouse

Reactivity: Human, Mouse, Rat

### Background:

AMP-activated protein kinase (AMPK) is highly conserved from yeast to plants and animals and plays a key role in the regulation of energy homeostasis. AMPK is a heterotrimeric complex composed of a catalytic  $\alpha$  subunit and regulatory  $\beta$  and  $\gamma$  subunits, each of which is encoded by two or three distinct genes ( $\alpha 1, 2$ ;  $\beta 1, 2$ ;  $\gamma 1, 2, 3$ ). The kinase is activated by an elevated AMP/ATP ratio due to cellular and environmental stress, such as heat shock, hypoxia, and ischemia. The tumor suppressor LKB1, in association with accessory proteins STRAD and MO25, phosphorylates AMPK $\alpha$  at Thr172 in the activation loop, and this phosphorylation is required for AMPK activation. AMPK $\alpha$  is also phosphorylated at Thr258 and Ser485 (for  $\alpha 1$ ; Ser491 for  $\alpha 2$ ). The upstream kinase and the biological significance of these phosphorylation events have yet to be elucidated. The  $\beta 1$  subunit is post-translationally modified by myristoylation and multi-site phosphorylation including Ser24/25, Ser96, Ser101, Ser108, and Ser182. Phosphorylation at Ser108 of the  $\beta 1$  subunit seems to be required for AMPK activation, while phosphorylation at Ser24/25 and Ser182 affects AMPK localization. Several mutations in AMPK $\gamma$  subunits have been identified, most of which are located in the putative AMP/ATP binding sites (CBS or Bateman domains). Mutations at these sites lead to reduction of AMPK activity and cause glycogen accumulation in heart or skeletal muscle. Accumulating evidence indicates that AMPK not only regulates the metabolism of fatty acids and glycogen, but also modulates protein synthesis and cell growth through EF2 and TSC2/mTOR pathways, as well as blood flow via eNOS/nNOS.

### Product:

Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.

### Molecular Weight:

~ 64 kDa

### Swiss-Prot:

Q13131

### Purification&Purity:

The antibody was affinity-purified from mouse antiserum by affinity-chromatography using epitope-specific immunogen and the purity is > 95% (by SDS-PAGE).

### Applications:

WB (1/1000 - 1/2000), IHC (1/100 - 1/200)

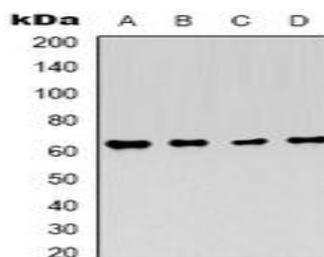
### Storage&Stability:

Store at 4 °C short term. Aliquot and store at -20 °C long term. Avoid freeze-thaw cycles.

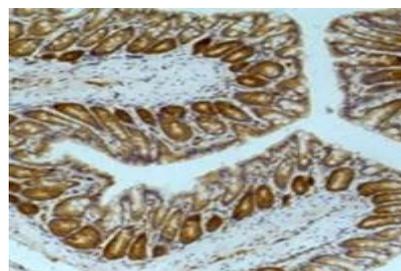
### Specificity:

Recognizes endogenous levels of AMPK alpha 1 protein.

### DATA:



Western blot analysis of AMPK alpha 1 expression in HeLa (A), 293T (B), NIH3T3 (C), PC12 (D) whole cell lysates.



Immunohistochemical analysis of AMPK alpha 1 staining in mouse colon formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact pol-

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## PRODUCT DATA SHEET

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ymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

**Note:**

For research use only, not for use in diagnostic procedure.

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