

### 35-1173: Polyclonal Antibody to AMPK Alpha1/AMPK Alpha2(Phospho-Thr183/Thr172)

|                                |  |
|--------------------------------|--|
| <b>Clonality :</b>             | Polyclonal   |
| <b>Application :</b>           | IHC, WB  |
| <b>Reactivity :</b>            | Rat, Mouse, Human  |
| <b>Gene :</b>                  | PRKAA1   |
| <b>Gene ID :</b>               | 5562   |
| <b>Uniprot ID :</b>            | Q13131/P54646  |
| <b>Format :</b>                | Purified   |
| <b>Alternative Name :</b>      | AMPK, AMPK $\alpha$ 1, AMPK $\alpha$ 2   |
| <b>Isotype :</b>               | Rabbit IgG   |
| <b>Immunogen Information :</b> | Peptide sequence around phosphorylation site of threonine 183(L-R-T(p)-S-C)/threonine172(L-R-T(p)-S-C) derived from Human AMPK $\alpha$ 1/AMPK $\alpha$ 2. |

#### Description

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. 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: 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 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 has tau-protein kinase activity: in response to amyloid beta A4 protein (APP) exposure, activated by CAMKK2, leading to phosphorylation of MAPT/TAU; however the relevance of such data remains unclear in vivo. Also phosphorylates CFTR, EEF2K, KLC1, NOS3 and SLC12A1.

#### Product Info

|                            |  |
|----------------------------|--|
| <b>Amount :</b>            | 50 $\mu$ l / 100 $\mu$ l   |
| <b>Content :</b>           | Supplied at 1.0mg/mL in phosphate buffered saline (without Mg <sup>2+</sup> and Ca <sup>2+</sup> ), pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol. |
| <b>Storage condition :</b> | Store the antibody at 4°C, stable for 6 months. For long-term storage, store at -20°C. Avoid repeated freeze and thaw cycles.                                |

## Application Note

Predicted MW: 63kd, Western blotting: 1:500~1:1000, Immunohistochemistry: 1:50~1:100

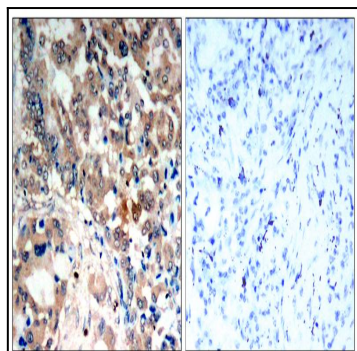


Figure 1: Immunohistochemical analysis of paraffin-embedded human lung carcinoma tissue, using AMPKα1/AMPKα2(Phospho-Thr174/Thr172) Antibody (35-1173 ).

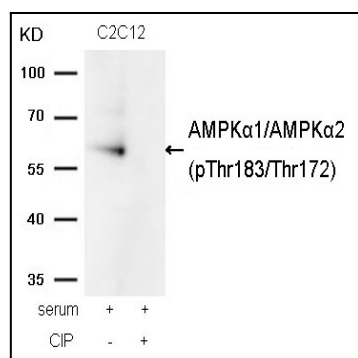


Figure 2: Western blot analysis of extracts from C2C12 cells, treated with serum or calf intestinal phosphatase (CIP), using AMPKα1/AMPKα2(Phospho-Thr174/Thr172) Antibody 35-1173 .