

p-AMPK α 1/2 (Thr 172): sc-33524

BACKGROUND

AMPK (for 5'-AMP-activated protein kinase) is a heterotrimeric complex comprising a catalytic α subunit and regulatory β and γ subunits. It protects cells from stresses that cause ATP depletion by switching off ATP-consuming biosynthetic pathways. AMPK is activated by high AMP and low ATP through a mechanism involving allosteric regulation, promotion of phosphorylation by an upstream protein kinase known as AMPK kinase, and inhibition of dephosphorylation. Activated AMPK can phosphorylate and regulate *in vivo* hydroxymethylglutaryl-CoA reductase and acetyl-CoA carboxylase, which are key regulatory enzymes of sterol synthesis and fatty acid synthesis, respectively. The human AMPK α 1 and AMPK α 2 genes encode 548 amino acid and 552 amino acid proteins, respectively. Human AMPK β 1 encodes a 271 amino acid protein and human AMPK β 2 encodes a 272 amino acid protein. The human AMPK γ 1 gene encodes a 331 amino acid protein. Human AMPK γ 2 and AMPK γ 3, which are 569 and 492 amino acid proteins, respectively, contain unique N-terminal domains and may participate directly in the binding of AMP within the AMPK complex.

CHROMOSOMAL LOCATION

Genetic locus: PRKAA1 (human) mapping to 5p13.1, PRKAA2 (human) mapping to 1p32.2; Prkaa1 (mouse) mapping to 15 A1, Prkaa2 (mouse) mapping to 4 C6.

SOURCE

p-AMPK α 1/2 (Thr 172) is a rabbit polyclonal antibody raised against a short amino acid sequence containing phosphorylated Thr 172 of AMPK α 2 of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-33524 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-AMPK α 1/2 (Thr 172) is recommended for detection of Thr 172 phosphorylated AMPK α 1 and AMPK α 2 isoforms of the catalytic subunit of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000). p-AMPK α 1/2 (Thr 172) is also recommended for detection of correspondingly phosphorylated Thr on AMPK α 1 and α 2 isoforms of the catalytic subunit in additional species, including equine, canine, bovine, porcine and avian.

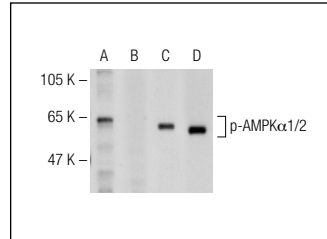
Suitable for use as control antibody for AMPK α 1/2 siRNA (h): sc-45312, AMPK α 1/2 siRNA (m): sc-45313, AMPK α 1/2 shRNA Plasmid (h): sc-45312-SH, AMPK α 1/2 shRNA Plasmid (m): sc-45313-SH, AMPK α 1/2 shRNA (h) Lentiviral Particles: sc-45312-V and AMPK α 1/2 shRNA (m) Lentiviral Particles: sc-45313-V.

Molecular Weight of p-AMPK α 1/2: 63 kDa.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



Western blot analysis of AMPK α 1/2 phosphorylation in untreated (A, C) and lambda protein phosphatase (sc-200312A) treated (B, D) C2C12 whole cell lysates. Antibodies tested include p-AMPK α 1/2 (Thr 172): sc-33524 (A, C) and AMPK α 1 (71.54): sc-130394 (B, D).

SELECT PRODUCT CITATIONS

- Yang, J., et al. 2006. Long-term metformin treatment stimulates cardiomyocyte glucose transport through an AMP-activated protein kinase-dependent reduction in Glut4 endocytosis. *Endocrinology* 147: 2728-2736.
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- Potter, W.B., et al. 2010. Metabolic regulation of neuronal plasticity by the energy sensor AMPK. *PLoS ONE* 5: e8996.
- Lussier, C.R., et al. 2010. Loss of hepatocyte-nuclear-factor-1 α impacts on adult mouse intestinal epithelial cell growth and cell lineages differentiation. *PLoS ONE* 5: e12378.
- Viscarra, J.A., et al. 2011. Glut4 is upregulated despite decreased Insulin signaling during prolonged fasting in northern elephant seal pups. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 300: R150-R154.
- Husted, R.F., et al. 2011. Oxygen regulation of the epithelial Na channel in the collecting duct. *Am. J. Physiol. Renal Physiol.* 300: F412-F424.
- Cherian, A.K., et al. 2011. Quantitative RT-PCR and immunoblot analyses reveal acclimated A2 noradrenergic neuron substrate fuel transporter, glucokinase, phospho-AMPK, and dopamine- β -hydroxylase responses to hypoglycemia. *J. Neurosci. Res.* 89:1114-1124.

RESEARCH USE

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