

AMPK α 1/2 (D-6): sc-74461

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* hydroxy-methylglutaryl-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. The human AMPK β 1 gene encodes a 271 amino acid protein and the human AMPK β 2 gene 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.

REFERENCES

1. Stapleton, D., et al. 1996. Mammalian AMP-activated protein kinase subfamily. *J. Biol. Chem.* 271: 611-614.
2. Stapleton, D., et al. 1997. AMP-activated protein kinase isoenzyme family: subunit structure and chromosomal location. *FEBS Lett.* 409: 452-456.
3. Hardie, D.G., et al. 1997. The AMP-activated protein kinase-fuel gauge of the mammalian cell? *Eur. J. Biochem.* 246: 259-273.

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

AMPK α 1/2 (D-6) is a mouse monoclonal antibody raised against amino acids 251-550 mapping at the C-terminus of AMPK α 1 of human origin.

PRODUCT

Each vial contains 200 μ g IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

AMPK α 1/2 (D-6) (D-6) is available conjugated to agarose (sc-74461 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-74461 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-74461 PE), fluorescein (sc-74461 FITC), Alexa Fluor[®] 488 (sc-74461 AF488), Alexa Fluor[®] 546 (sc-74461 AF546), Alexa Fluor[®] 594 (sc-74461 AF594) or Alexa Fluor[®] 647 (sc-74461 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-74461 AF680) or Alexa Fluor[®] 790 (sc-74461 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

APPLICATIONS

AMPK α 1/2 (D-6) is recommended for detection of AMPK α 1 and AMPK α 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

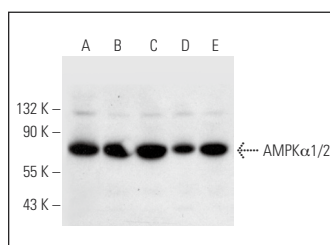
AMPK α 1/2 (D-6) is also recommended for detection of AMPK α 1 and AMPK α 2 in additional species, including canine.

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.

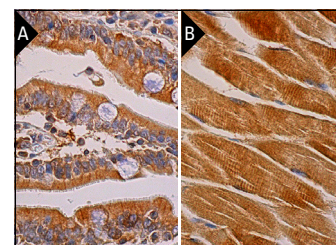
Molecular Weight of AMPK α 1/2: 63 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, MCF7 whole cell lysate: sc-2206 or K-562 whole cell lysate: sc-2203.

DATA



AMPK α 1/2 (D-6): sc-74461. Western blot analysis of AMPK α 1/2 expression in IB4 (A), MCF7 (B), Jurkat (C), HeLa (D) and K-562 (E) whole cell lysates.



AMPK α 1/2 (D-6): sc-74461. Immunoperoxidase staining of formalin fixed, paraffin-embedded human small intestine tissue showing cytoplasmic staining of glandular cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human skeletal muscle tissue showing cytoplasmic staining of myocytes (B).

SELECT PRODUCT CITATIONS

1. Filomeni, G., et al. 2010. Carcinoma cells activate AMP-activated protein kinase-dependent autophagy as survival response to kaempferol-mediated energetic impairment. *Autophagy* 6: 202-216.
2. Park, S.Y., et al. 2019. Metformin-activated AMPK regulates β -catenin to reduce cell proliferation in colon carcinoma RKO cells. *Oncol. Lett.* 17: 2695-2702.
3. Qi, W., et al. 2020. Inhibitory mechanism of muscone in liver cancer involves the induction of apoptosis and autophagy. *Oncol. Rep.* 43: 839-850.

RESEARCH USE

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