SANTA CRUZ BIOTECHNOLOGY, INC.

AMPKα1 (H-4): sc-398861

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 AMPKα1 and AMPKα2 genes encode 548 amino acid and 552 amino acid proteins, respectively. Human AMPKβ1 encodes a 271 amino acid protein and human AMPKβ2 encodes a 272 amino acid protein. The human AMPKγ1 gene encodes a 331 amino acid protein. Human AMPKγ2 and AMPKγ3, 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; Prkaa1 (mouse) mapping to 15 A1.

SOURCE

AMPKα1 (H-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 509-533 at the C-terminus of AMPKα1 of human origin.

PRODUCT

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

AMPKα1 (H-4) is available conjugated to agarose (sc-398861 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-398861 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-398861 PE), fluorescein (sc-398861 FITC), Alexa Fluor® 488 (sc-398861 AF488), Alexa Fluor® 546 (sc-398861 AF546), Alexa Fluor® 594 (sc-398861 AF594) or Alexa Fluor® 647 (sc-398861 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-398861 AF680) or Alexa Fluor® 790 (sc-398861 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-398861 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

APPLICATIONS

AMPKα1 (H-4) is recommended for detection of AMPKα1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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).

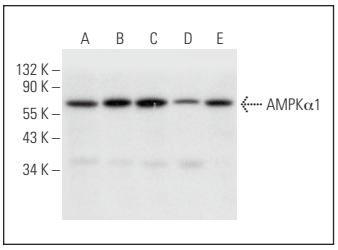
AMPKα1 (H-4) is also recommended for detection of AMPKα1 in additional species, including bovine.

Suitable for use as control antibody for AMPKα1 siRNA (h): sc-29673, AMPKα1 siRNA (m): sc-29674, AMPKα1 siRNA (r): sc-270142, AMPKα1 shRNA Plasmid (h): sc-29673-SH, AMPKα1 shRNA Plasmid (m): sc-29674-SH, AMPKα1 shRNA Plasmid (r): sc-270142-SH, AMPKα1 shRNA (h) Lentiviral Particles: sc-29673-V, AMPKα1 shRNA (m) Lentiviral Particles: sc-29674-V and AMPKα1 shRNA (r) Lentiviral Particles: sc-270142-V.

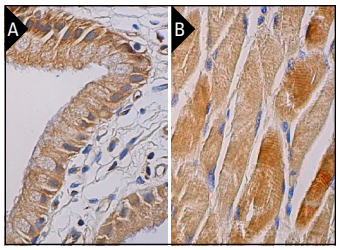
Molecular Weight of AMPKα1: 63 kDa.

Positive Controls: IB4 whole cell lysate: sc-364780, MCF7 whole cell lysate: sc-2206 or Jurkat whole cell lysate: sc-2204.

DATA



AMPKα1 (H-4): sc-398861. Western blot analysis of AMPKα1 expression in IB4 (**A**), MCF7 (**B**), Jurkat (**C**), HeLa (**D**) and K-562 (**E**) whole cell lysates.



AMPKα1 (H-4): sc-398861. Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder 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. Chen, L., et al. 2011. Cadmium induction of reactive oxygen species activates the mTOR pathway, leading to neuronal cell death. Free Radic. Biol. Med. 50: 624-632.
2. Ning, J., et al. 2019. Inhibiting lysine 353 oxidation of GRP78 by a hypochlorous probe targeting endoplasmic reticulum promotes autophagy in cancer cells. Cell Death Dis. 10: 858.
3. Gomes, L., et al. 2020. Resveratrol modifies lipid composition of two cancer cell lines. Biomed Res. Int. 2020: 5393041.
4. Sun, J., et al. 2021. Atorvastatin attenuates cardiac hypertrophy through AMPK/miR-143-3p/Bcl2 axis. Arch. Physiol. Biochem. 127: 390-396.

RESEARCH USE

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