

# AMPK $\beta$ 1 (Z14): sc-100357

## BACKGROUND

AMPK (for 5'-AMP-activated protein kinase) is a heterotrimeric complex comprising a catalytic  $\alpha$  subunit and regulatory  $\beta$  and  $\gamma$  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 $\alpha$ 1 and AMPK $\alpha$ 2 genes encode 548 amino acid and 552 amino acid proteins, respectively. Human AMPK $\beta$ 1 encodes a 271 amino acid protein and human AMPK $\beta$ 2 encodes a 272 amino acid protein. The human AMPK $\gamma$ 1 gene encodes a 331 amino acid protein. Human AMPK $\gamma$ 2 and AMPK $\gamma$ 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: PRKAB1 (human) mapping to 12q24.23; Prkab1 (mouse) mapping to 5 F.

## SOURCE

AMPK $\beta$ 1 (Z14) is a mouse monoclonal antibody raised against recombinant AMPK $\beta$ 1 of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## STORAGE

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

## APPLICATIONS

AMPK $\beta$ 1 (Z14) is recommended for detection of AMPK $\beta$ 1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ 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).

Suitable for use as control antibody for AMPK $\beta$ 1 siRNA (h): sc-38925, AMPK $\beta$ 1 siRNA (m): sc-38926, AMPK $\beta$ 1 shRNA Plasmid (h): sc-38925-SH, AMPK $\beta$ 1 shRNA Plasmid (m): sc-38926-SH, AMPK $\beta$ 1 shRNA (h) Lentiviral Particles: sc-38925-V and AMPK $\beta$ 1 shRNA (m) Lentiviral Particles: sc-38926-V.

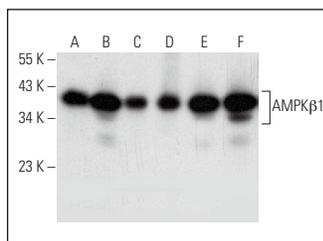
Molecular Weight of AMPK $\beta$ 1: 38 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, T98G cell lysate: sc-2294 or SW480 cell lysate: sc-2219.

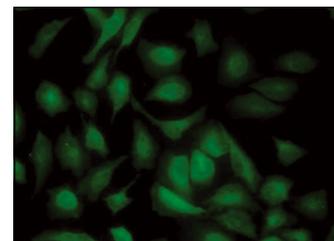
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



AMPK $\beta$ 1 (Z14): sc-100357. Western blot analysis of AMPK $\beta$ 1 expression in HeLa (A), SW480 (B), T98G (C), NIH/3T3 (D), RAW 264.7 (E) and C6 (F) whole cell lysates.



AMPK $\beta$ 1 (Z14): sc-100357. Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing nuclear and cytoplasmic localization.

## SELECT PRODUCT CITATIONS

- Wang, X., et al. 2017. Sestrin2 and sestrin3 suppress NK-92 cell-mediated cytotoxic activity on ovarian cancer cells through AMPK and mTORC1 signaling. *Oncotarget* 8: 90132-90143.
- Hanson, R.L., et al. 2019. Protein stability of p53 targets determines their temporal expression dynamics in response to p53 pulsing. *J. Cell Biol.* 218: 1282-1297.
- Yang, M., et al. 2020. Hepatic E4BP4 induction promotes lipid accumulation by suppressing AMPK signaling in response to chemical or diet-induced ER stress. *FASEB J.* 34: 13533-13547.
- Jørgensen, N.O., et al. 2021. Direct small molecule ADA-m-site AMPK activators reveal an AMPK $\gamma$ 3-independent mechanism for blood glucose lowering. *Mol. Metab.* 51: 101259.
- Eskenes, N.O., et al. 2024. The human AMPK $\gamma$ 3 R225W mutation negatively impacts site-1 nucleotide binding and does not enhance basal AMPK $\gamma$ 3-associated activity nor glycogen production in human or mouse skeletal muscle. *Acta Physiol.* 240: e14213.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.