

# p-ACC $\alpha$ (F-2): sc-271965

## BACKGROUND

Acetyl-CoA carboxylase (ACC) is a complex multifunctional enzyme system which catalyzes the carboxylation of acetyl-CoA to malonyl-CoA, the rate-limiting step in fatty acid synthesis. Exercise diminishes the activity of acetyl-CoA carboxylase in human muscle. ACC $\alpha$  (ACC1) is the rate-limiting enzyme in the biogenesis of long-chain fatty acids, and ACC $\beta$  (ACC2) may control mitochondrial fatty acid oxidation. These two isoforms of ACC control the amount of fatty acids in the cells. The catalytic function of ACC $\alpha$  is regulated by phosphorylation (inactive) and dephosphorylation (active) of targeted serine residues and by allosteric transformation by citrate or palmitoyl-CoA, which serve as the enzyme's short-term regulatory mechanism. The gene encoding ACC $\alpha$  maps to human chromosome 17 and encodes a form of ACC, which is the major ACC in lipogenic tissues. The catalytic core of ACC $\beta$  is homologous to that of the ACC $\alpha$ , except for an additional peptide of about 150 amino acids at the N-terminus.

## REFERENCES

- Kim, K.H. 1997. Regulation of mammalian acetyl-coenzyme A carboxylase. *Annu. Rev. Nutr.* 17: 77-99.
- Abu-Elheiga, L., et al. 2000. The subcellular localization of acetyl-CoA carboxylase 2. *Proc. Natl. Acad. Sci. USA* 97: 1444-1449.

## CHROMOSOMAL LOCATION

Genetic locus: ACACA (human) mapping to 17q12; Acaca (mouse) mapping to 11 C.

## SOURCE

p-ACC $\alpha$  (F-2) is a mouse monoclonal antibody raised against a short amino acid sequence containing Ser 78 and Ser 80 phosphorylated ACC $\alpha$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

p-ACC $\alpha$  (F-2) is available conjugated to agarose (sc-271965 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271965 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271965 PE), fluorescein (sc-271965 FITC), Alexa Fluor<sup>®</sup> 488 (sc-271965 AF488), Alexa Fluor<sup>®</sup> 546 (sc-271965 AF546), Alexa Fluor<sup>®</sup> 594 (sc-271965 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-271965 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-271965 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-271965 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-271965 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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## STORAGE

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

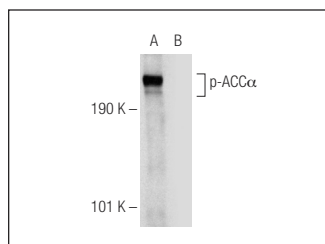
## APPLICATIONS

p-ACC $\alpha$  (F-2) is recommended for detection of Ser 78 and Ser 80 dually phosphorylated ACC $\alpha$  of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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 ACC $\alpha$  siRNA (h): sc-40312, ACC $\alpha$  siRNA (m): sc-40313, ACC $\alpha$  shRNA Plasmid (h): sc-40312-SH, ACC $\alpha$  shRNA Plasmid (m): sc-40313-SH, ACC $\alpha$  shRNA (h) Lentiviral Particles: sc-40312-V and ACC $\alpha$  shRNA (m) Lentiviral Particles: sc-40313-V.

Molecular Weight of p-ACC $\alpha$ : 265 kDa.

## DATA



p-ACC $\alpha$  (F-2): sc-271965. Western blot analysis of ACC $\alpha$  phosphorylation in untreated (A) and lambda protein phosphatase (sc-200312A) treated (B) rat heart tissue extracts.

## SELECT PRODUCT CITATIONS

- Wakamiya, T., et al. 2014. Elevated expression of fatty acid synthase and nuclear localization of carnitine palmitoyltransferase 1C are common among human gliomas. *Neuropathology* 34: 465-474.
- Chaube, B., et al. 2015. AMPK maintains energy homeostasis and survival in cancer cells via regulating p38/PGC-1 $\alpha$ -mediated mitochondrial biogenesis. *Cell Death Discov.* 1: 15063.
- Kim, Y., et al. 2016. Anti-obesity effects of boiled tuna extract in mice with obesity induced by a high-fat diet. *Int. J. Mol. Med.* 38: 1281-1288.
- Rueggsegger, G.N., et al. 2017. 5-Aminoimidazole-4-carboxamide ribonucleotide prevents fat gain following the cessation of voluntary physical activity. *Exp. Physiol.* 102: 1474-1485.
- Xiao, Z., et al. 2018. SDHB downregulation facilitates the proliferation and invasion of colorectal cancer through AMPK functions excluding those involved in the modulation of aerobic glycolysis. *Exp. Ther. Med.* 15: 864-872.
- Yang, S., et al. 2020. Tectorigenin attenuates diabetic nephropathy by improving vascular endothelium dysfunction through activating AdipoR1/2 pathway. *Pharmacol. Res.* 153: 104678.

## RESEARCH USE

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