

# AMPK and ACC Antibody Sampler Kit



**Orders:** 877-616-CELL (2355)  
orders@cellsignal.com

**Support:** 877-678-TECH (8324)

**Web:** info@cellsignal.com  
cellsignal.com

1 Kit (6 x 20 microliters)

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

**For Research Use Only. Not for Use in Diagnostic Procedures.**

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-AMPK $\alpha$ (Thr172) (40H9) Rabbit mAb	2535	20 $\mu$ l	62 kDa	Rabbit IgG
AMPK $\alpha$ (D5A2) Rabbit mAb	5831	20 $\mu$ l	62 kDa	Rabbit IgG
Phospho-AMPK $\beta$ 1 (Ser182) Antibody	4186	20 $\mu$ l	38 kDa	Rabbit
AMPK $\beta$ 1/2 (57C12) Rabbit mAb	4150	20 $\mu$ l	30, 38 kDa	Rabbit IgG
Phospho-Acetyl-CoA Carboxylase (Ser79) (D7D11) Rabbit mAb	11818	20 $\mu$ l	280 kDa	Rabbit IgG
Acetyl-CoA Carboxylase (C83B10) Rabbit mAb	3676	20 $\mu$ l	280 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 $\mu$ l		Goat

Please visit [cellsignal.com](http://cellsignal.com) for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

## Description

The AMPK and ACC Antibody Sampler Kit provides an economical means to investigate energy homeostasis and fatty acid synthesis within the cell. The kit contains primary and secondary antibodies to perform two Western blots with each antibody.

## Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at  $-20^{\circ}\text{C}$ . Do not aliquot the antibody.

## Background

AMP-activated protein kinase (AMPK) is highly conserved from yeast to plants and animals and plays a key role in the regulation of energy homeostasis (1). AMPK is a heterotrimeric complex composed of a catalytic  $\alpha$  subunit and regulatory  $\beta$  and  $\gamma$  subunits, each of which is encoded by two or three distinct genes ( $\alpha$ 1, 2;  $\beta$ 1, 2;  $\gamma$ 1, 2, 3)(2). The kinase is activated by an elevated AMP/ATP ratio due to cellular and environmental stress, such as heat shock, hypoxia and ischemia (1). The tumor suppressor LKB1, in association with accessory proteins STRAD and MO25, phosphorylates AMPK $\alpha$  at Thr172 in the activation loop and this phosphorylation is required for AMPK activation (3-5). AMPK $\alpha$  is also phosphorylated at Thr258 and Ser485 (for  $\alpha$ 1; Ser491 for  $\alpha$ 2). The upstream kinase and biological significance of these phosphorylation events have yet to be elucidated (6). The  $\beta$ 1 subunit is post-translationally modified by myristoylation and multi-site phosphorylation including Ser24/25, Ser96, Ser101 and Ser182 (6,7). Phosphorylation at Ser108 of the  $\beta$ 1 subunit seems to be required for the activation of AMPK enzyme, while phosphorylation of Ser24/25 and Ser182 affects AMPK localization (7). Accumulating evidence indicates that AMPK not only regulates the metabolism of fatty acids and glycogen, but also modulates protein synthesis and cell growth through EF2 and TSC2/mTOR pathways, as well as blood flow via eNOS/nNOS (1).

Acetyl-CoA carboxylase (ACC) catalyzes the pivotal step of the fatty acid synthesis pathway. The 265 kDa ACC $\alpha$  is the predominant isoform found in liver, adipocytes and mammary gland, while the 280 kDa ACC $\beta$  is the major isoform in skeletal muscle and heart (8). Phosphorylation by AMPK at Ser79 or by PKA at Ser1200 inhibits the enzymatic activity of ACC (9). ACC is a potential target of anti-obesity drugs (10,11).

## Background References

- Hardie, D.G. (2004) *J. Cell Sci.* 117, 5479-5487.
- Carling, D. (2004) *Trends Biochem. Sci.* 29, 18-24.
- Hawley, S.A. et al. (1996) *J. Biol. Chem.* 271, 27879-27887.
- Lizcano, J.M. et al. (2004) *EMBO J.* 23, 833-843.
- Shaw, R.J. et al. (2004) *Proc. Natl. Acad. Sci. U S A* 101, 3329-3335.
- Woods, A. et al. (2003) *J. Biol. Chem.* 278, 28434-28442.
- Warden, S.M. et al. (2001) *Biochem J.* 354, 275-283.
- Ruderman, N.B. et al. (1999) *Am. J. Physiol.* 276, E1-E18.
- Ha, J. et al. (1994) *J. Biol. Chem.* 269, 22162-22168.
- Abu-Elheiga, L. et al. (2001) *Science* 291, 2613-2616.
- Levert, K.L. et al. (2002) *J. Biol. Chem.* 277, 16347-16350.

## Trademarks and Patents

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

All other trademarks are the property of their respective owners. Visit [cellsignal.com/trademarks](http://cellsignal.com/trademarks) for more information.

## Limited Uses

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.