

**Phospho-AMPK $\alpha$  (Thr172) (40H9) Rabbit mAb (Biotinylated)**

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

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

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

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Hm Mk Dm Sc	Endogenous	62	Rabbit IgG	#Q13131, #P54646	5562, 5563

<b>Product Usage Information</b>	<b>Application</b> Western Blotting	<b>Dilution</b> 1:1000
<b>Storage</b>	Supplied in 140 mM NaCl, 3 mM KCl, 10 mM sodium phosphate (pH 7.4) dibasic, 2 mM potassium phosphate monobasic, 2 mg/mL BSA, and 50% glycerol. Store at -20°C. <i>Do not aliquot the antibody.</i>	
<b>Specificity/Sensitivity</b>	Phospho-AMPK $\alpha$ (Thr172) (40H9) Rabbit mAb (Biotinylated) detects endogenous AMPK $\alpha$ only when phosphorylated at Thr172. The antibody detects both $\alpha$ 1 and $\alpha$ 2 isoforms of the catalytic subunit, but does not detect the regulatory $\beta$ or $\gamma$ subunits.	
<b>Species predicted to react based on 100% sequence homology</b>	Chicken, Zebrafish, Bovine, Pig	
<b>Source / Purification</b>	Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Thr172 of human AMPK $\alpha$ protein.	
<b>Description</b>	This Cell Signaling Technology antibody is conjugated to biotin under optimal conditions. The biotinylated antibody is expected to exhibit the same species cross-reactivity as the unconjugated Phospho-AMPK $\alpha$ (Thr172) (40H9) Rabbit mAb #2535.	
<b>Background</b>	<p>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 <math>\alpha</math> subunit and regulatory <math>\beta</math> and <math>\gamma</math> subunits, each of which is encoded by two or three distinct genes (<math>\alpha</math>1, 2; <math>\beta</math>1, 2; <math>\gamma</math>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<math>\alpha</math> at Thr172 in the activation loop, and this phosphorylation is required for AMPK activation (3-5). AMPK<math>\alpha</math> is also phosphorylated at Thr258 and Ser485 (for <math>\alpha</math>1; Ser491 for <math>\alpha</math>2). The upstream kinase and the biological significance of these phosphorylation events have yet to be elucidated (6). The <math>\beta</math>1 subunit is post-translationally modified by myristoylation and multi-site phosphorylation including Ser24/25, Ser96, Ser101, Ser108, and Ser182 (6,7). Phosphorylation at Ser108 of the <math>\beta</math>1 subunit seems to be required for AMPK activation, while phosphorylation at Ser24/25 and Ser182 affects AMPK localization (7). Several mutations in AMPK<math>\gamma</math> subunits have been identified, most of which are located in the putative AMP/ATP binding sites (CBS or Bateman domains). Mutations at these sites lead to reduction of AMPK activity and cause glycogen accumulation in heart or skeletal muscle (1,2). 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).</p>	
<b>Background References</b>	<ol style="list-style-type: none"> <li>1. Hardie, D.G. (2004) <i>J Cell Sci</i> 117, 5479-87.</li> <li>2. Carling, D. (2004) <i>Trends Biochem Sci</i> 29, 18-24.</li> <li>3. Hawley, S.A. et al. (1996) <i>J Biol Chem</i> 271, 27879-87.</li> <li>4. Lizcano, J.M. et al. (2004) <i>EMBO J</i> 23, 833-43.</li> <li>5. Shaw, R.J. et al. (2004) <i>Proc Natl Acad Sci USA</i> 101, 3329-35.</li> <li>6. Woods, A. et al. (2003) <i>J Biol Chem</i> 278, 28434-42.</li> <li>7. Warden, S.M. et al. (2001) <i>Biochem J</i> 354, 275-83.</li> </ol>	
<b>Species Reactivity</b>	Species reactivity is determined by testing in at least one approved application (e.g., western blot).	
<b>Western Blot Buffer</b>	IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween@ 20 at 4°C with gentle shaking, overnight.	

**Applications Key****W:** Western Blotting**Cross-Reactivity Key****H:** Human **M:** Mouse **R:** Rat **Hm:** Hamster **Mk:** Monkey **Dm:** D. melanogaster **Sc:** S. cerevisiae**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.