#6707 Store at -20°C

AMPKα (23A3) Rabbit mAb (Sepharose® Bead Conjugate)

Cell Signaling TECHNOLOGY®

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Entrez-Gene ID #5562
UniProt ID #Q13131

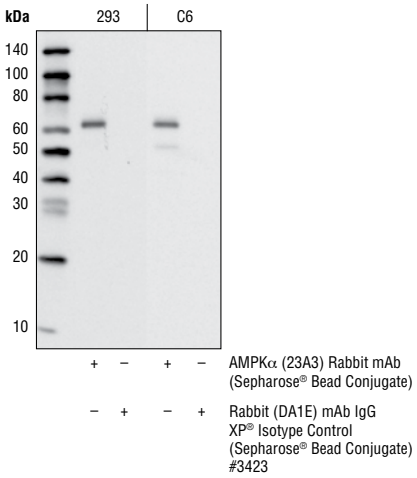
Applications	Species Cross-Reactivity*	Molecular Wt.	Isotype
IP Endogenous	H, M, R, Mk	62 kDa	Rabbit IgG

Description: This Cell Signaling Technology antibody is immobilized via covalent binding of primary amino groups to N-hydroxysuccinimide (NHS)-activated Sepharose® beads. AMPKα (23A3) Rabbit mAb (Sepharose® Bead Conjugate) is useful for immunoprecipitation assays. The antibody is expected to exhibit the same species cross-reactivity as the unconjugated AMPKα (23A3) Rabbit mAb #2603.

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 α subunit and regulatory β and γ subunits, each of which is encoded by two or three distinct genes (α1, 2; β1, 2; γ1, 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 AMPKα at Thr172 in the activation loop and this phosphorylation is required for AMPK activation (3-5). AMPKα is also phosphorylated at Thr258 and Ser485 (for α1; Ser491 for α2). The upstream kinase and the biological significance of these phosphorylation events have yet to be elucidated (6). The β1 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 β1 subunit seems to be required for the activation of AMPK enzyme, while phosphorylation at Ser24/25 and Ser182 affects AMPK localization (7). Several mutations in AMPKγ 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).

Specificity/Sensitivity: AMPKα (23A3) Rabbit mAb (Sepharose® Bead Conjugate) detects endogenous levels of total AMPKα protein.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to the amino terminus sequence of human AMPKα.



Immunoprecipitation of 293 and C6 cell lysates using Rabbit (DA1E) mAb IgG XP® Isotype Control (Sepharose® Bead Conjugate) #3423 and AMPKα (23A3) Rabbit mAb (Sepharose® Bead Conjugate). The western blot was probed using AMPKα (F6) Mouse mAb #2793.

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 ug/ml BSA and 50% glycerol. Store at -20°C. *Do not aliquot the antibody.*

***Species cross-reactivity other than human and rat is determined by western blot using unconjugated antibody.**

Directions for Use: Add 10 µl of well-vortexed beads to 200 µl of cell lysate at 1 mg/ml in 1X Cell Lysis Buffer (10X) #9803. See protocol for more details.

For application specific protocols please see the web page for this product at www.cellsignal.com.

Please visit www.cellsignal.com for a complete listing of recommended companion products.

Background References:

(1) Hardie, D.G. (2004) *J Cell Sci* 117, 5479-87.
(2) Carling, D. (2004) *Trends Biochem Sci* 29, 18-24.
(3) Hawley, S.A. et al. (1996) *J Biol Chem* 271, 27879-87.
(4) Lizcano, J.M. et al. (2004) *EMBO J* 23, 833-43.
(5) Shaw, R.J. et al. (2004) *Proc Natl Acad Sci USA* 101, 3329-35.
(6) Woods, A. et al. (2003) *J Biol Chem* 278, 28434-42.
(7) Warden, S.M. et al. (2001) *Biochem J* 354, 275-83.

Applications Key: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide
Species Cross-Reactivity Key: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.