

## AK1 (G-9): sc-365048



The Power to Question

## BACKGROUND

Adenylate kinases 1-5 (designated AK1-5) are a set of enzymes that regulate the phosphorylation state of intracellular adenine nucleotides, which are the principle high-energy phosphoryl-carrying molecules in living cells. AKs influence metabolic signals, which include gene expression, ion channel activity and protein kinase-mediated signaling, by catalyzing phosphoryl transfer between adenine nucleotides (AMP, ADP, ATP). Inherited mutations leading to AK deficiencies in erythrocytes have been implicated in hemolytic anemia. Human AK1 is found in the cytosol of skeletal muscle, brain and erythrocytes and is clustered within myofibrils or bound to membranes. AK1-mediated phosphotransfer is essential for maintaining sufficient cellular energy, which enables proper skeletal muscle performance and metabolic activity.

## REFERENCES

1. Wegmann, G., et al. 1992. *In situ* compartmentation of creatine kinase in intact sarcomeric muscle: the acto-Myosin overlap zone as a molecular sieve. *J. Muscle Res. Cell Motil.* 13: 420-435.
2. Dzeja, P.P., et al. 1998. Adenylate kinase: kinetic behavior in intact cells indicates it is integral to multiple cellular processes. *Mol. Cell. Biochem.* 184: 169-182.
3. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 103000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
4. Janssen, E., et al. 2000. Adenylate kinase 1 gene deletion disrupts muscle energetic economy despite metabolic rearrangement. *EMBO J.* 19: 6371-6381.
5. Pucar, D., et al. 2000. Compromised energetics in the adenylate kinase AK1 gene knockout heart under metabolic stress. *J. Biol. Chem.* 275: 41424-41429.
6. Carrasco, A.J., et al. 2001. Adenylate kinase phosphotransfer communicates cellular energetic signals to ATP-sensitive potassium channels. *Proc. Natl. Acad. Sci. USA* 98: 7623-7628.

## CHROMOSOMAL LOCATION

Genetic locus: AK1 (human) mapping to 9q34.11; Ak1 (mouse) mapping to 2 B.

## SOURCE

AK1 (G-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 31-59 within an internal region of AK1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365048 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## STORAGE

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

## APPLICATIONS

AK1 (G-9) is recommended for detection of AK1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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 AK1 siRNA (h): sc-38904, AK1 siRNA (m): sc-38905, AK1 shRNA Plasmid (h): sc-38904-SH, AK1 shRNA Plasmid (m): sc-38905-SH, AK1 shRNA (h) Lentiviral Particles: sc-38904-V and AK1 shRNA (m) Lentiviral Particles: sc-38905-V.

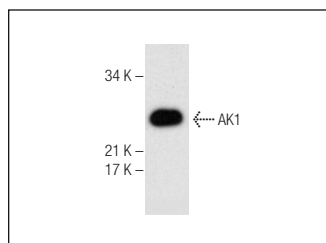
Molecular Weight of AK1: 22 kDa.

Positive Controls: rat skeletal muscle extract: sc-364810, C6 whole cell lysate: sc-364373 or HeLa whole cell lysate: sc-2200.

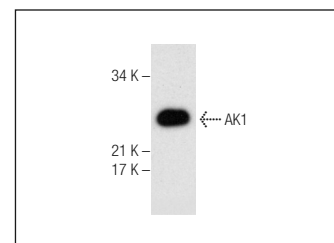
## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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



AK1 (G-9): sc-365048. Western blot analysis of AK1 expression in rat skeletal muscle tissue extract.



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## 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.