

# AK3/4 (SJB3-36): sc-53912

## 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. By catalyzing phosphoryl transfer between adenine nucleotides (AMP, ADP, ATP), AKs influence metabolic signals, which include gene expression, ion channel activity and protein kinase-mediated signaling. Inherited mutations leading to AK deficiencies in erythrocytes have been implicated in hemolytic anemia. Human AK3 is a 223 amino acid protein that is present in the mitochondria of liver and heart. It utilizes GTP as a substrate relative to isoforms AK1 and AK2, which use ATP.

## REFERENCES

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2. Xu, G., et al. 1992. Characterization of human adenylate kinase 3 (AK3) cDNA and mapping of the AK3 pseudogene to an intron of the NF1 gene. *Genomics* 13: 537-542.
3. Barile, M., et al. 1994. Mechanisms of toxicity of 3'-azido-3'-deoxythymidine. Its interaction with adenylate kinase. *Biochem. Pharmacol.* 48: 1405-1412.
4. 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.
5. Noma, T., et al. 1999. Characterization of the 5'-flanking region of the gene encoding bovine adenylate kinase isozyme 3. *Biochim. Biophys. Acta* 1489: 383-388.
6. Noma, T., et al. 1999. Cloning and functional characterization of the promoter region of the gene encoding human adenylate kinase isozyme 3. *Biochem. Biophys. Res. Commun.* 264: 990-997.
7. Online Mendelian Inheritance in Man, OMIM<sup>™</sup>. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 103000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
8. 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.
9. LocusLink Report (LocusID: 205). <http://www.ncbi.nlm.nih.gov/LocusLink/>

## CHROMOSOMAL LOCATION

Genetic locus: AK3 (human) mapping to 9p24.1, AK4 (human) mapping to 1p31.3.

## SOURCE

AK3 (SJB3-36) is a mouse monoclonal antibody raised against recombinant adenylate kinase 3 of human origin.

## RESEARCH USE

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

## PRODUCT

Each vial contains 100 µg IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

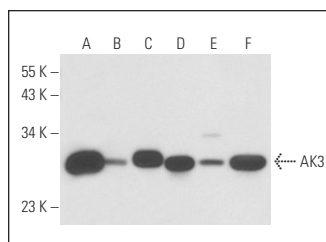
## APPLICATIONS

AK3/4 (SJB3-36) is recommended for detection of AK3 and AK4 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

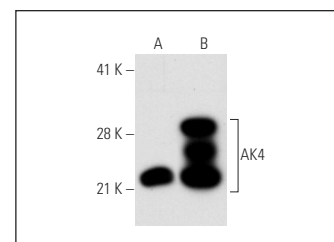
Molecular Weight of AK3/4: 25 kDa.

Positive Controls: AK4 (h): 293T Lysate: sc-112661, A-673 cell lysate: sc-2414 or Caki-1 cell lysate: sc-2224.

## DATA



AK3 (SJB3-36): sc-53912. Western blot analysis of AK3 expression in Hep G2 (A), A-673 (B), Caki-1 (C), HeLa (D), Jurkat (E) and HEL 92.1.7 (F) whole cell lysates.



AK3 (SJB3-36): sc-53912. Western blot analysis of AK4 expression in non-transfected: sc-117752 (A) and human AK4 transfected: sc-112661 (B) 293T whole cell lysates.

## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.