10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

Hexokinase 1 Antibody

Catalog # ASC11938

Product Information

Application	WB, IHC, IF, E
Primary Accession	P19367
Other Accession	NP_000179, 188497754
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	102486
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	Hexokinase 1 antibody can be used for detection of Hexokinase 1 by Western blot at 1 - 2 □g/ml. Antibody can also be used for immunohistochemistry starting at 5 □g/mL. For immunofluorescence start at 20 □g/mL.

Additional Information

Gene ID	3098
Other Names	Hexokinase-1, 2.7.1.1, Brain form hexokinase, Hexokinase type I, HK I, HK1
Target/Specificity	HK1; Hexokinase 1 antibody is human, mouse and rat reactive. Multiple isoforms of Hexokinase 1 are known to exist.
Reconstitution & Storage	Hexokinase 1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	Hexokinase 1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	HK1 (HGNC:4922)
Function	Catalyzes the phosphorylation of various hexoses, such as D- glucose, D-glucosamine, D-fructose, D-mannose and 2-deoxy-D-glucose, to hexose 6-phosphate (D-glucose 6-phosphate, D-glucosamine 6-phosphate, D-fructose 6-phosphate, D-mannose 6-phosphate and 2-deoxy-D-glucose 6- phosphate, respectively) (PubMed:1637300, PubMed:25316723, PubMed:27374331). Does not phosphorylate N-acetyl-D-glucosamine (PubMed:27374331). Mediates the initial step of glycolysis by catalyzing phosphorylation of D-glucose to D-glucose 6-phosphate (By similarity). Involved in innate immunity and inflammation by acting as a pattern recognition receptor for bacterial peptidoglycan (PubMed:27374331). When released in the cytosol, N-acetyl-D-glucosamine component of bacterial peptidoglycan inhibits the

	hexokinase activity of HK1 and causes its dissociation from mitochondrial outer membrane, thereby activating the NLRP3 inflammasome (PubMed:27374331).
Cellular Location	Mitochondrion outer membrane; Peripheral membrane protein. Cytoplasm, cytosol. Note=The mitochondrial-binding peptide (MBP) region promotes association with the mitochondrial outer membrane (Probable). Dissociates from the mitochondrial outer membrane following inhibition by N-acetyl-D-glucosamine, leading to relocation to the cytosol (PubMed:27374331).
Tissue Location	Isoform 2: Erythrocyte specific (Ref.6). Isoform 3: Testis-specific (PubMed:10978502). Isoform 4: Testis-specific (PubMed:10978502). {ECO:0000269|PubMed:10978502, ECO:0000269|Ref.6}

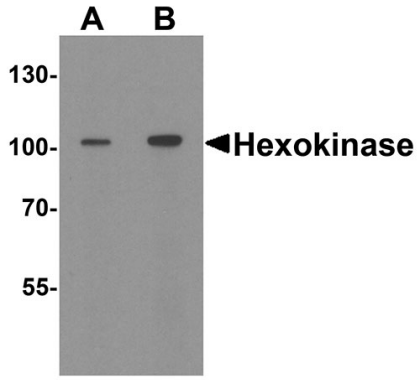
Background

There are four major glucose-phosphorylating isoenzymes, designated Hexokinase 1 I, II, III, and IV (1). Hexokinase 1 activity is involved in the first step in several metabolic pathways including phosphorylation of glucose to produce glucose-6-phosphate, thus committing glucose to the glycolytic pathway (1,2). Hexokinase 1 2 is the predominant Hexokinase 1 isozyme expressed in insulin-responsive tissues such as skeletal muscle and its expression is insulin-responsive (3). It is involved in the increased rate of glycolysis seen in rapidly growing cancer cells (4).

References

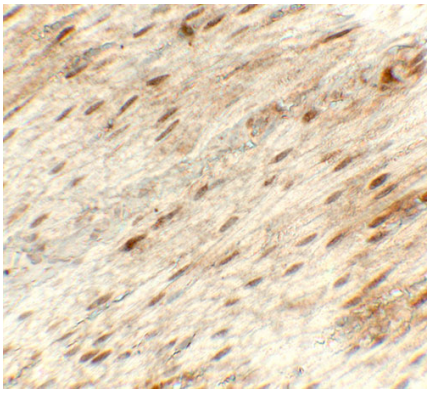
Chen T, Ning D, Sun H, et al. Sequence Analysis and Molecular Characterization of Clonorchis sinensis Hexokinase 1, an Unusual Trimeric 50-kDa Glucose-6-Phosphate-Sensitive Allosteric Enzyme. PLoS One 2014; 9:e107940.
Halestrap AP, Pereira GC, and Pasdois P. The role of Hexokinase 1 in cardioprotection-mechanism and potential for translation. Br. J. Pharmacol. 2014; epub.
Roberts DJ and Miyamoto S. Hexokinase 1 II integrates energy metabolism and cellular protection: Akting on mitochondria and TORCing to autophagy. Cell Death Differ. 2014; epub.
Wang L, Xiong H, Wu F, et al. Hexokinase 1 2-Mediated Warburg Effect Is Required for PTEN- and p53-Deficiency-Driven Prostate Cancer Growth. Cell Rep. 2014; 8:1461-74.

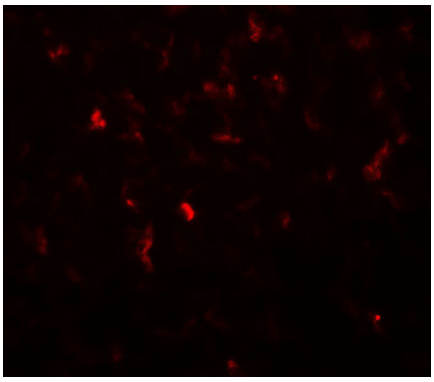
Images



Western blot analysis of Hexokinase 1 in rat bladder tissue lysate with Hexokinase 1 antibody at (A) 1 and (B) 2 µg/ml.

Immunohistochemistry of Hexokinase 1 in rat stomach tissue with Hexokinase 1 antibody at 5 µg/mL.





Immunofluorescence of Hexokinase 1 in rat stomach tissue with Hexokinase 1 antibody at 20 µg/mL.