

DGUOK (G-2): sc-376256

The Power to Question

BACKGROUND

DGUOK (deoxyguanosine kinase), also known as DGK, is a 277 amino acid protein that localizes to mitochondria and exists as multiple alternatively spliced isoforms. Functioning as a homodimer and highly expressed in a variety of tissues, including liver, muscle and brain, DGUOK uses ATP to catalyze the conversion of deoxyguanosine to dGMP. Via its catalytic activity, DGUOK is essential for the phosphorylation of purine deoxyribonucleosides in the mitochondrial matrix and is an important antiviral and chemotherapeutic tool. Defects in the gene encoding DGUOK are the cause of hepatocerebral mitochondrial DNA depletion syndrome (MDS), a group of disorders that result in reduced mtDNA (mitochondrial DNA) copy number and are characterized by liver failure and neurologic abnormalities.

REFERENCES

- Johansson, M., et al. 1996. Cloning and expression of human deoxyguanosine kinase cDNA. *Proc. Natl. Acad. Sci. USA* 93: 7258-7262.
- Mandel, H., et al. 2001. The deoxyguanosine kinase gene is mutated in individuals with depleted hepatocerebral mitochondrial DNA. *Nat. Genet.* 29: 337-341.
- Taanman, J.W., et al. 2002. A novel mutation in the deoxyguanosine kinase gene causing depletion of mitochondrial DNA. *Ann. Neurol.* 52: 237-239.
- Salviati, L., et al. 2002. Mitochondrial DNA depletion and dGK gene mutations. *Ann. Neurol.* 52: 311-317.
- Taanman, J.W., et al. 2003. Mitochondrial DNA depletion can be prevented by dGMP and dAMP supplementation in a resting culture of deoxyguanosine kinase-deficient fibroblasts. *Hum. Mol. Genet.* 12: 1839-1845.
- Mancuso, M., et al. 2005. New DGK gene mutations in the hepatocerebral form of mitochondrial DNA depletion syndrome. *Arch. Neurol.* 62: 745-747.
- Mousson de Camaret, B., et al. 2007. Kinetic properties of mutant deoxyguanosine kinase in a case of reversible hepatic mtDNA depletion. *Biochem. J.* 402: 377-385.

CHROMOSOMAL LOCATION

Genetic locus: DGUOK (human) mapping to 2p13.1; DGUOK (mouse) mapping to 6 C3.

SOURCE

DGUOK (G-2) is a mouse monoclonal antibody raised against amino acids 170-277 mapping at the C-terminus of DGUOK of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

DGUOK (G-2) is recommended for detection of DGUOK 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

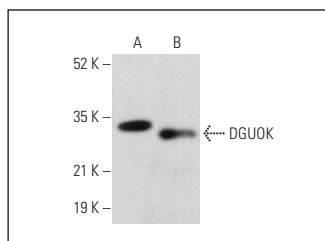
Suitable for use as control antibody for DGUOK siRNA (h): sc-77139, DGUOK siRNA (m): sc-77140, DGUOK shRNA Plasmid (h): sc-77139-SH, DGUOK shRNA Plasmid (m): sc-77140-SH, DGUOK shRNA (h) Lentiviral Particles: sc-77139-V and DGUOK shRNA (m) Lentiviral Particles: sc-77140-V.

Molecular Weight of DGUOK: 28 kDa.

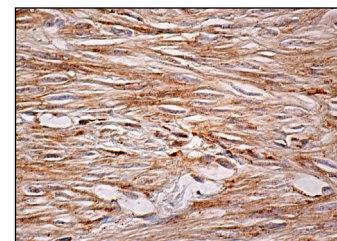
Positive Controls: mouse kidney extract: sc-2255 or KNRK whole cell lysate: sc-2214.

RECOMMENDED SUPPORT 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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA

DGUOK (G-2): sc-376256. Western blot analysis of DGUOK expression in KNRK whole cell lysate (A) and mouse kidney tissue extract (B).



DGUOK (G-2): sc-376256. Immunoperoxidase staining of formalin fixed, paraffin-embedded human smooth muscle tissue showing cytoplasmic staining of smooth muscle cells.

SELECT PRODUCT CITATIONS

- Lin, S., et al. 2019. The mitochondrial deoxyguanosine kinase is required for cancer cell stemness in lung adenocarcinoma. *EMBO Mol. Med.* 11: e10849.

RESEARCH USE

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