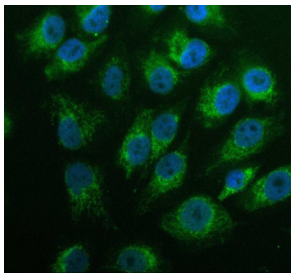
GK2 Antibody / Glycerol kinase 2 (FY12204)

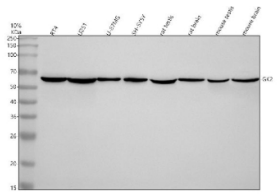
Catalog No.	Formulation	Size
FY12204	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

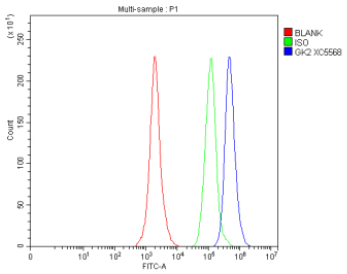
Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q14410
Localization	Cytoplasm
Applications	Western Blot : 0.25-0.5ug/ml Immunocytochemistry/Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This GK2 antibody is available for research use only.



Immunofluorescent staining of GK2 using anti-GK2 antibody (green). GK2 was detected in an immunocytochemical section of cells. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5 ug/ml rabbit anti-GK2 antibody overnight at 4oC. DyLight 488 Conjugated Goat Anti-Rabbit IgG was used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37oC. The section was counterstained with DAPI nuclear stain (blue). Visualize using a fluorescence microscope and filter sets appropriate for the label used.



Western blot analysis of GK2 using anti-GK2 antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human RT4 whole cell lysates, Lane 2: human U251 whole cell lysates, Lane 3: human U-87MG whole cell lysates, Lane 4: human SH-SY5Y whole cell lysates, Lane 5: rat testis tissue lysates, Lane 6: rat brain tissue lysates, Lane 7: mouse testis tissue lysates, Lane 8: mouse brain tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GK2 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A specific band was detected for GK2 at approximately 61 kDa. The expected band size for GK2 is at 61 kDa.



Flow Cytometry analysis of SH-SY5Y cells using anti-GK2 antibody. Overlay histogram showing SH-SY5Y cells stained with (Blue line). To facilitate intracellular staining, cells were fixed with 4% paraformaldehyde and permeabilized with permeabilization buffer. The cells were blocked with 10% normal goat serum. And then incubated with rabbit anti-GK2 antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.

Description

GK2 antibody detects Glycerol kinase 2, encoded by the GK2 gene on chromosome 4q13.3. GK2 antibody is commonly applied in studies of glycerol metabolism, mitochondrial energy regulation, and sperm function. GK2 belongs to the glycerol kinase family, enzymes that phosphorylate glycerol to glycerol-3-phosphate, a critical intermediate in lipid metabolism and glycolysis. Unlike the ubiquitously expressed GK1, GK2 is primarily expressed in testis and sperm, where it plays a role in fertility and energy production. It localizes to mitochondria, highlighting its role in coupling glycerol metabolism with energy pathways.

Structurally, GK2 is a ~61 kDa enzyme composed of conserved ATP-binding and substrate-binding domains typical of kinases in this family. It lacks some regulatory motifs present in GK1, leading to distinct enzymatic properties and tissue specificity. The mitochondrial localization sequence targets GK2 to the inner membrane, enabling direct integration into oxidative phosphorylation networks.

Functionally, GK2 catalyzes the phosphorylation of glycerol to glycerol-3-phosphate, fueling glycolysis and triglyceride synthesis. In sperm, this activity supports energy metabolism necessary for motility and fertilization. GK2 also contributes to mitochondrial glycerol-3-phosphate shuttle activity, linking cytosolic NADH reoxidation with the respiratory chain. Knockdown or disruption of GK2 leads to impaired sperm motility and male infertility, emphasizing its critical reproductive role. Researchers use GK2 antibody to study sperm metabolism, mitochondrial function, and lipid biochemistry.

Clinically, GK2 mutations or dysfunction have been associated with infertility and metabolic syndromes involving lipid dysregulation. Because GK2 expression is highly specific to testis, it has been investigated as a biomarker of male fertility potential. GK2 is also implicated in mitochondrial biology disorders, where energy coupling is impaired. Its restricted expression compared to GK1 makes it an attractive target for reproductive health research. NSJ Bioreagents provides GK2 antibody as a validated tool for mitochondrial and fertility research.

Experimentally, GK2 antibody is applied in western blotting to detect the ~61 kDa protein, in immunofluorescence microscopy to localize it in mitochondria, and in immunohistochemistry to examine expression in testis tissue. Enzyme assays combined with GK2 antibody detection enable correlation of enzymatic activity with localization and expression.

Application Notes

Optimal dilution of the GK2 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the N-terminus of human GK2 was used as the immunogen for the GK2 antibody.

Storage

After reconstitution, the GK2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.