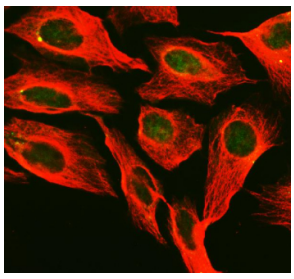
PNKP Antibody / Polynucleotide kinase phosphatase (FY12599)

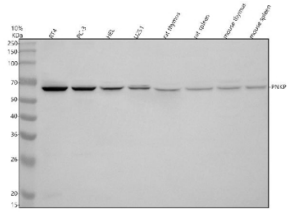
Catalog No.	Formulation	Size
FY12599	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

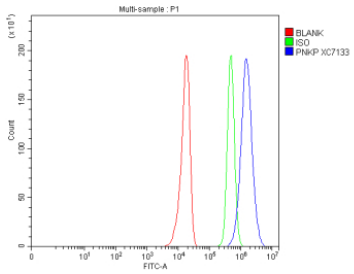
Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q96T60
Applications	Western Blot : 0.25-0.5ug/ml Immunocytochemistry/Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This PNKP antibody is available for research use only.



Immunofluorescent staining of PNKP using anti-PNKP antibody (green) and anti-Beta Tubulin antibody (red). PNKP was detected in an immunocytochemical section of U2OS 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-PNKP antibody and mouse anti-Beta Tubulin antibody overnight at 4oC. DyLight 488 Conjugated Goat Anti-Rabbit IgG and Cy3 Conjugated Goat Anti-Mouse IgG were used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37oC. Visualize using a fluorescence microscope and filter sets appropriate for the label used.



Western blot analysis of PNKP using anti-PNKP 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 PC-3 whole cell lysates, Lane 3: human HEL whole cell lysates, Lane 4: human U251 whole cell lysates, Lane 5: rat thymus tissue lysates, Lane 6: rat spleen tissue lysates, Lane 7: mouse thymus tissue lysates, Lane 8: mouse spleen 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-PNKP 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 PNKP at approximately 57 kDa. The expected molecular weight of PNKP is ~57 kDa.



Flow Cytometry analysis of U251 cells using anti-PNKP antibody. Overlay histogram showing U251 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-PNKP 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

PNKP antibody detects Polynucleotide kinase phosphatase, a DNA repair enzyme that restores damaged DNA termini during base excision and single-strand break repair. PNKP possesses both 5'-kinase and 3'-phosphatase activities, preparing DNA ends for ligation by DNA ligase. The PNKP antibody is widely used in DNA repair, neurobiology, and cancer research to study genome maintenance, oxidative damage response, and repair pathway coordination.

PNKP is encoded by the PNKP gene on human chromosome 19q13.33. The protein is approximately 521 amino acids long and contains an N-terminal forkhead-associated (FHA) domain that mediates interactions with XRCC1 and XRCC4, scaffolding proteins in the single-strand and double-strand break repair complexes. The C-terminal catalytic region includes both phosphatase and kinase domains that process DNA termini with abnormal 3'-phosphate or 5'-hydroxyl ends.

The PNKP antibody detects a 57 kilodalton band by western blot and shows nuclear foci following DNA damage. PNKP plays a dual role in the repair of oxidative and radiation-induced DNA breaks by preparing strand ends for gap filling and ligation. Mutations in PNKP cause neurological disorders such as microcephaly with early-onset seizures and developmental delay, resulting from defective DNA repair in postmitotic neurons.

PNKP activity is tightly regulated by phosphorylation and interaction with repair complexes. In cancer, overexpression of PNKP enhances DNA repair capacity, contributing to therapy resistance. Pharmacologic inhibition of PNKP sensitizes tumor cells to radiation and chemotherapeutic agents, underscoring its potential as a therapeutic target.

Because PNKP maintains genomic stability and neuronal survival, it serves as a key model for studying the interface between DNA repair and neurodegeneration. NSJ Bioreagents provides a validated PNKP antibody optimized for western blot, immunofluorescence, and DNA repair assays, supporting detailed analysis of genome maintenance and repair coordination.

Application Notes

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

Immunogen

E.coli-derived human PNKP recombinant protein (Position: D43-E487) was used as the immunogen for the PNKP antibody.

Storage

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