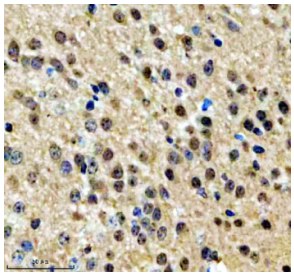
NPAT Antibody / Nuclear protein of the ATM locus (FY12172)

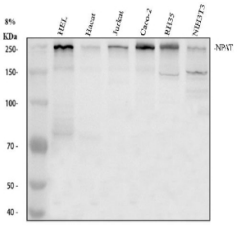
Catalog No.	Formulation	Size
FY12172	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

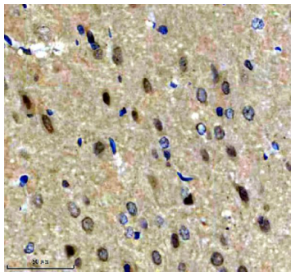
Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q14207
Localization	Nuclear
Applications	Western Blot: 0.25-0.5ug/ml Immunohistochemistry: 2-5ug/ml Immunocytochemistry/Immunofluorescence: 5ug/ml Flow cytometry: 1-3ug/million cells ELISA: 0.1-0.5ug/ml
Limitations	This NPAT antibody is available for research use only.



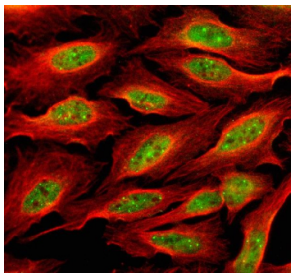
Immunohistochemical staining of NPAT using anti-NPAT antibody. NPAT was detected in a paraffin-embedded section of mouse brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-NPAT antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



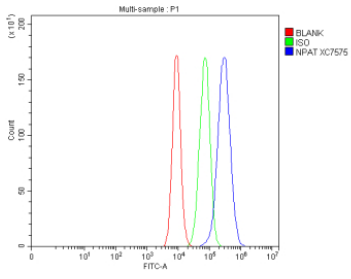
Western blot analysis of NPAT using anti-NPAT antibody. Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human HEL whole cell lysates, Lane 2: human Hacat whole cell lysates, Lane 3: human Jurkat whole cell lysates, Lane 4: human Caco-2 whole cell lysates, Lane 5: rat RH35 whole cell lysates, Lane 6: mouse NIH/3T3 whole cell 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-NPAT 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 NPAT at approximately 230-250 kDa. The predicted band size for NPAT is at ~154 kDa, but due to extensive phosphorylation, the protein migrates more slowly in SDS-PAGE and is commonly observed at 230-260 kDa.



Immunohistochemical staining of NPAT using anti-NPAT antibody. NPAT was detected in a paraffin-embedded section of rat brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-NPAT antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



Immunofluorescent staining of NPAT using anti-NPAT antibody (green) and anti-Beta Tubulin antibody (red). NPAT 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-NPAT 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.



Flow Cytometry analysis of Caco-2 cells using anti-NPAT antibody. Overlay histogram showing Caco-2 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-NPAT 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

NPAT antibody detects Nuclear protein, ataxia-telangiectasia locus, encoded by the NPAT gene on chromosome 11q22.3. NPAT antibody is used to study this nuclear regulatory protein, which coordinates cell cycle progression, histone gene transcription, and DNA damage responses. NPAT was identified as a substrate of ATM kinase, linking it to DNA damage signaling and ataxia-telangiectasia biology. It is ubiquitously expressed, with high levels in proliferating cells, particularly in tissues with active cell division such as bone marrow and lymphoid organs.

Structurally, NPAT contains multiple phosphorylation sites targeted by cyclin-dependent kinases (CDKs) and ATM. These modifications regulate its activity during cell cycle transitions and in response to DNA damage. NPAT localizes to Cajal

bodies and histone gene clusters, where it acts as a transcriptional co-activator for histone genes. This localization is mediated by its interaction with the transcription factor HiNF-P, forming the HiNF-P/NPAT complex essential for histone gene transcription.

Functionally, NPAT is indispensable for S-phase progression. It activates histone gene transcription at the G1/S transition, ensuring histone supply for DNA replication. NPAT also influences DNA repair by participating in ATM signaling, linking DNA damage sensing to transcriptional regulation. Knockout studies in mice show embryonic lethality, confirming NPAT's essential role in development. Researchers apply NPAT antibody to study its functions in chromatin biology, cell cycle regulation, and DNA repair pathways.

Clinically, NPAT is significant in cancer biology. Overexpression is observed in certain malignancies, where it supports uncontrolled proliferation. Altered NPAT activity may contribute to genomic instability and defective DNA damage responses. Its regulation by ATM connects NPAT to ataxia-telangiectasia, a neurodegenerative and cancer-prone disorder caused by ATM mutations. NPAT is also a potential biomarker of proliferation, with expression correlating to cell cycle activity. NSJ Bioreagents offers NPAT antibody to facilitate studies in DNA replication, chromatin remodeling, and cancer research.

Experimentally, NPAT antibody is used in western blotting to detect the highly phosphorylated 230-260 kDa protein, in immunofluorescence to visualize its localization to histone gene clusters, and in immunohistochemistry to assess proliferation in tissue samples. Immunoprecipitation with NPAT antibody helps characterize its interactions with HiNF-P and ATM kinase. These tools enable detailed exploration of its cell cycle and DNA repair functions.

Application Notes

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

Immunogen

E.coli-derived human NPAT recombinant protein (Position: K87-Q1191) was used as the immunogen for the NPAT antibody.

Storage

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

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