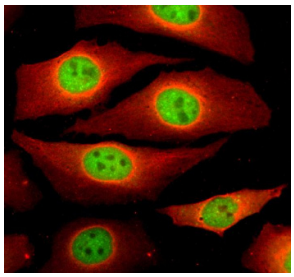
NCAPG Antibody / Non-SMC condensin I complex subunit G (FY12942)

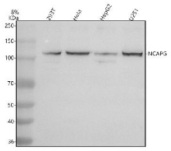
Catalog No.	Formulation	Size
FY12942	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
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	Q9BPX3
Localization	Nuclear, cytoplasmic
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 NCAPG antibody is available for research use only.

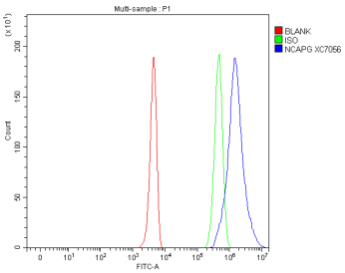


Immunofluorescent staining of NCAPG using anti-NCAPG antibody (green) and anti-Beta Tubulin antibody (red). NCAPG was detected in an immunocytochemical section of Hela cells. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5 ug/ml rabbit anti-NCAPG 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 NCAPG using anti-NCAPG antibody. Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human 293T whole cell lysates, Lane 2: human Hela whole cell lysates, Lane 3: human HepG2 whole cell lysates, Lane 4: human U251 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-NCAPG 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 band is detected at ~110-120 kDa in all samples, with a faint species just below 100 kDa in some lysates. The upward shift and minor lower band are consistent with mitotic phosphorylation-dependent mobility differences and a small hypophosphorylated pool of NCAPG.

Immunohistochemical staining of NCAPG using anti-NCAPG antibody. NCAPG was detected in a paraffin-embedded section of human tonsil 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-NCAPG 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.



Flow Cytometry analysis of 293T cells using anti-NCAPG antibody. Overlay histogram showing 293T 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-NCAPG 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

NCAPG antibody detects Non-SMC condensin I complex subunit G, an essential component of the condensin I complex that mediates chromosome condensation and segregation during mitosis. The UniProt recommended name is Non-SMC condensin I complex subunit G (NCAPG), with alternate names condensin complex subunit G, chromosome-associated protein G, and CAP-G. NCAPG functions as a regulatory subunit within the condensin complex, coordinating chromosome supercoiling and stabilization necessary for accurate chromosomal segregation.

During cell division, NCAPG antibody identifies a protein critical for organizing chromatin architecture. NCAPG, together with SMC2, SMC4, NCAPH, and NCAPD2, composes condensin I, which compacts chromatin fibers into mitotic chromosomes. It binds ATP-dependent SMC core units and interacts with regulatory partners that modulate DNA topology and cohesion release. In addition to its structural role, NCAPG has been linked to transcriptional regulation, genomic stability, and cell proliferation pathways. Abnormal expression of NCAPG correlates with aneuploidy, mitotic defects, and tumor progression in various cancers, including hepatocellular carcinoma, glioblastoma, and lung cancer.

The NCAPG antibody is used to monitor cell cycle progression, particularly in the G2/M phase where condensin activation occurs. Knockdown of NCAPG leads to chromosome segregation errors, DNA damage, and mitotic arrest. Studies also show NCAPG involvement in DNA repair and replication stress responses. The NCAPG gene is located on chromosome 4p15.32 and encodes a 1015-amino acid nuclear protein. NCAPG's expression peaks in proliferating cells and declines upon differentiation, making it a useful marker of mitotic activity.

Beyond its canonical mitotic role, NCAPG contributes to chromatin reorganization during transcriptional activation and may interact with epigenetic regulators. Upregulation of NCAPG in cancer promotes oncogenic growth via activation of PI3K/AKT and MAPK signaling pathways. High NCAPG levels are associated with poor prognosis and therapeutic resistance, suggesting it as a biomarker and target for anti-proliferative therapy. Researchers use NCAPG antibody for western blotting, immunostaining, and flow cytometry to study mitotic chromosome structure and cell cycle regulation. NSJ Bioreagents offers validated reagents for detecting human NCAPG to support research in cell division and chromosomal biology.

Application Notes

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

Immunogen

E.coli-derived human NCAPG recombinant protein (Position: M1-R993) was used as the immunogen for the NCAPG antibody.

Storage

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