

**NBN Antibody (C-term)**  
**Affinity Purified Rabbit Polyclonal Antibody (Pab)**  
**Catalog # AP11776b**

**Specification**

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**NBN Antibody (C-term) - Product Information**

Application	IF, WB, FC,E
Primary Accession	<a href="#">O60934</a>
Other Accession	<a href="#">NP_002476.2</a>
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	84959
Antigen Region	602-630

**NBN Antibody (C-term) - Additional Information**

**Gene ID** 4683

**Other Names**

Nibrin, Cell cycle regulatory protein p95, Nijmegen breakage syndrome protein 1, NBN, NBS, NBS1, P95

**Target/Specificity**

This NBN antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 602-630 amino acids from the C-terminal region of human NBN.

**Dilution**

IF~~1:10~50  
WB~~1:1000  
FC~~1:10~50

**Format**

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.

**Storage**

Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

**Precautions**

NBN Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

**NBN Antibody (C-term) - Protein Information**

**Name** NBN ([HGNC:7652](#))

**Function** Component of the MRN complex, which plays a central role in double-strand break (DSB) repair, DNA recombination, maintenance of telomere integrity and meiosis (PubMed:[10888888](#), PubMed:[15616588](#), PubMed:[18411307](#), PubMed:[18583988](#), PubMed:[18678890](#), PubMed:[19759395](#), PubMed:[23115235](#), PubMed:[28216226](#), PubMed:[28867292](#), PubMed:[9705271](#)). The MRN complex is involved in the repair of DNA double-strand breaks (DSBs) via homologous recombination (HR), an error-free mechanism which primarily occurs during S and G2 phases (PubMed:[19759395](#), PubMed:[28867292](#), PubMed:[9705271](#)). The complex (1) mediates the end resection of damaged DNA, which generates proper single-stranded DNA, a key initial steps in HR, and is (2) required for the recruitment of other repair factors and efficient activation of ATM and ATR upon DNA damage (PubMed:[19759395](#), PubMed:[9705271](#)). The MRN complex possesses single-strand endonuclease activity and double-strand-specific 3'-5' exonuclease activity, which are provided by MRE11, to initiate end resection, which is required for single-strand invasion and recombination (PubMed:[19759395](#), PubMed:[28867292](#), PubMed:[9705271](#)). Within the MRN complex, NBN acts as a protein-protein adapter, which specifically recognizes and binds phosphorylated proteins, promoting their recruitment to DNA damage sites (PubMed:[12419185](#), PubMed:[15616588](#), PubMed:[18411307](#), PubMed:[18582474](#), PubMed:[18583988](#), PubMed:[18678890](#), PubMed:[19759395](#), PubMed:[19804756](#), PubMed:[23762398](#), PubMed:[24534091](#), PubMed:[27814491](#), PubMed:[27889449](#), PubMed:[33836577](#)). Recruits MRE11 and RAD50 components of the MRN complex to DSBs in response to DNA damage (PubMed:[12419185](#), PubMed:[18411307](#), PubMed:[18583988](#), PubMed:[18678890](#), PubMed:[24534091](#), PubMed:[26438602](#)). Promotes the recruitment of PI3/PI4-kinase family members ATM, ATR, and probably DNA-PKcs to the DNA damage sites, activating their functions (PubMed:[15064416](#), PubMed:[15616588](#), PubMed:[15790808](#), PubMed:[16622404](#), PubMed:[22464731](#), PubMed:[30952868](#), PubMed:[35076389](#)). Mediates the recruitment of phosphorylated RBBP8/CtIP to DSBs, leading to cooperation between the MRN complex and RBBP8/CtIP to initiate end resection (PubMed:[19759395](#), PubMed:[27814491](#), PubMed:[27889449](#), PubMed:[33836577](#)). RBBP8/CtIP specifically promotes the endonuclease activity of the MRN complex to clear DNA ends containing protein adducts (PubMed:[27814491](#), PubMed:[27889449](#), PubMed:[30787182](#), PubMed:[33836577](#)). The MRN complex is also required for the processing of R-loops (PubMed:[31537797](#)). NBN also functions in telomere length maintenance via its interaction with TERF2: interaction with TERF2 during G1 phase preventing recruitment of DCLRE1B/Apollo to telomeres (PubMed:[10888888](#), PubMed:[28216226](#)). NBN also promotes DNA repair choice at dysfunctional telomeres: NBN phosphorylation by CK2 promotes non-homologous end joining repair at telomeres, while unphosphorylated NBN promotes microhomology-mediated end-joining (MMEJ) repair (PubMed:[28216226](#)). Enhances AKT1 phosphorylation possibly by association with the mTORC2 complex (PubMed:[23762398](#)).

### Cellular Location

Nucleus. Chromosome. Nucleus, PML body. Chromosome, telomere Note=Localizes to discrete nuclear foci after treatment with genotoxic agents (PubMed:[10783165](#), PubMed:[26215093](#), PubMed:[26438602](#)). Localizes to DNA double-strand breaks (DSBs); recruited to DNA damage sites via association with phosphorylated proteins, such as phosphorylated H2AX, phosphorylated MDC1 and phosphorylated RAD17 (PubMed:[12419185](#), PubMed:[18411307](#), PubMed:[18582474](#), PubMed:[18583988](#), PubMed:[18678890](#), PubMed:[19338747](#), PubMed:[23115235](#), PubMed:[24534091](#), PubMed:[26438602](#)) Acetylation of 'Lys-5' of histone H2AX (H2AXK5ac) promotes NBN/NBS1 assembly at the sites of DNA damage (PubMed:[26438602](#))

### Tissue Location

Ubiquitous (PubMed:[9590180](#)). Expressed at high levels in testis (PubMed:[9590180](#)).

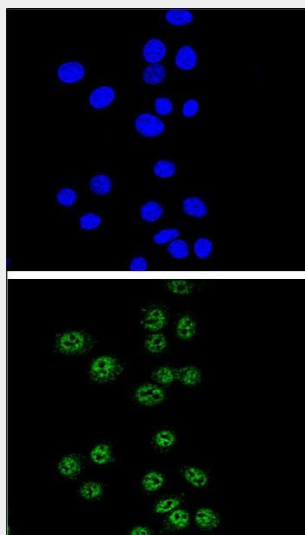
### NBN Antibody (C-term) - Protocols

Provided below are standard protocols that you may find useful for product applications.

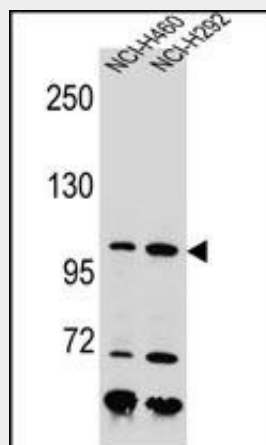
- [Western Blot](#)

- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

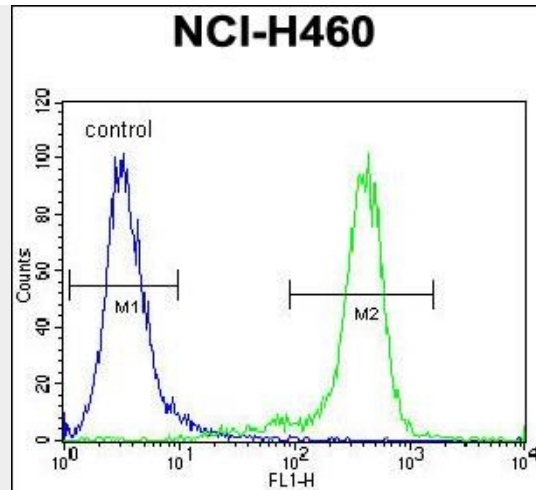
### NBN Antibody (C-term) - Images



Confocal immunofluorescent analysis of NBN Antibody (C-term) (Cat. #AP11776b) with HeLa cell followed by Alexa Fluor® 488-conjugated goat anti-rabbit IgG (green). DAPI was used to stain the cell nuclear (blue).



NBN Antibody (C-term) (Cat. #AP11776b) western blot analysis in NCI-H460, NCI-H292 cell line lysates (35ug/lane). This demonstrates the NBN antibody detected the NBN protein (arrow).



NBN Antibody (C-term) (Cat. #AP11776b) flow cytometric analysis of NCI-H460 cells (right histogram) compared to a negative control cell (left histogram). FITC-conjugated goat-anti-rabbit secondary antibodies were used for the analysis.

### **NBN Antibody (C-term) - Background**

Mutations in this gene are associated with Nijmegen breakage syndrome, an autosomal recessive chromosomal instability syndrome characterized by microcephaly, growth retardation, immunodeficiency, and cancer predisposition. The encoded protein is a member of the MRE11/RAD50 double-strand break repair complex which consists of 5 proteins. This gene product is thought to be involved in DNA double-strand break repair and DNA damage-induced checkpoint activation.

### **NBN Antibody (C-term) - References**

- Liu, Y., et al. *Carcinogenesis* 31(10):1762-1769(2010)
- Kavitha, C.V., et al. *Biochem. Biophys. Res. Commun.* 399(4):575-580(2010)
- Ho-Pun-Cheung, A., et al. *Pharmacogenomics J.* (2010) In press :
- Jelonek, K., et al. *J. Appl. Genet.* 51(3):343-352(2010)
- Jugessur, A., et al. *PLoS ONE* 5 (7), E11493 (2010) :