

**NIBRIN Antibody**  
Catalog # ASC11483**Specification**

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**NIBRIN Antibody - Product Information**

Application	WB, IHC, IF
Primary Accession	<a href="#">O60934</a>
Other Accession	<a href="#">NP_002476</a> , <a href="#">33356172</a>
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Application Notes	NIBRIN antibody can be used for detection of NIBRIN by Western blot at 1 - 2 µg/mL. Antibody can also be used for immunohistochemistry starting at 2.5 µg/mL. For immunofluorescence start at 5 µg/mL.

**NIBRIN Antibody - Additional Information**Gene ID **4683****Target/Specificity**

NBN; At least three alternatively spliced transcript isoforms of NIBRIN are known to exist.

**Reconstitution & Storage**

NIBRIN antibody can be stored at 4°C for three months and -20°C, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.

**Precautions**

NIBRIN Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

**NIBRIN Antibody - 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:<a href="http://www.uniprot.org/citations/10888888" target="\_blank">10888888</a>, PubMed:<a href="http://www.uniprot.org/citations/15616588" target="\_blank">15616588</a>, PubMed:<a href="http://www.uniprot.org/citations/18411307" target="\_blank">18411307</a>, PubMed:<a href="http://www.uniprot.org/citations/18583988" target="\_blank">18583988</a>, PubMed:<a href="http://www.uniprot.org/citations/18678890" target="\_blank">18678890</a>, PubMed:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/23115235" target="\_blank">23115235</a>, PubMed:<a href="http://www.uniprot.org/citations/28216226" target="\_blank">28216226</a>, PubMed:<a

href="http://www.uniprot.org/citations/28867292" target="\_blank">28867292</a>, PubMed:<a href="http://www.uniprot.org/citations/9705271" target="\_blank">9705271</a>). 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:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/28867292" target="\_blank">28867292</a>, PubMed:<a href="http://www.uniprot.org/citations/9705271" target="\_blank">9705271</a>). 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:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/9705271" target="\_blank">9705271</a>). 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:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/28867292" target="\_blank">28867292</a>, PubMed:<a href="http://www.uniprot.org/citations/9705271" target="\_blank">9705271</a>). 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:<a href="http://www.uniprot.org/citations/12419185" target="\_blank">12419185</a>, PubMed:<a href="http://www.uniprot.org/citations/15616588" target="\_blank">15616588</a>, PubMed:<a href="http://www.uniprot.org/citations/18411307" target="\_blank">18411307</a>, PubMed:<a href="http://www.uniprot.org/citations/18582474" target="\_blank">18582474</a>, PubMed:<a href="http://www.uniprot.org/citations/18583988" target="\_blank">18583988</a>, PubMed:<a href="http://www.uniprot.org/citations/18678890" target="\_blank">18678890</a>, PubMed:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/19804756" target="\_blank">19804756</a>, PubMed:<a href="http://www.uniprot.org/citations/23762398" target="\_blank">23762398</a>, PubMed:<a href="http://www.uniprot.org/citations/24534091" target="\_blank">24534091</a>, PubMed:<a href="http://www.uniprot.org/citations/27814491" target="\_blank">27814491</a>, PubMed:<a href="http://www.uniprot.org/citations/27889449" target="\_blank">27889449</a>, PubMed:<a href="http://www.uniprot.org/citations/33836577" target="\_blank">33836577</a>). Recruits MRE11 and RAD50 components of the MRN complex to DSBs in response to DNA damage (PubMed:<a href="http://www.uniprot.org/citations/12419185" target="\_blank">12419185</a>, PubMed:<a href="http://www.uniprot.org/citations/18411307" target="\_blank">18411307</a>, PubMed:<a href="http://www.uniprot.org/citations/18583988" target="\_blank">18583988</a>, PubMed:<a href="http://www.uniprot.org/citations/18678890" target="\_blank">18678890</a>, PubMed:<a href="http://www.uniprot.org/citations/24534091" target="\_blank">24534091</a>, PubMed:<a href="http://www.uniprot.org/citations/26438602" target="\_blank">26438602</a>). Promotes the recruitment of PI3/PI4-kinase family members ATM, ATR, and probably DNA-PKcs to the DNA damage sites, activating their functions (PubMed:<a href="http://www.uniprot.org/citations/15064416" target="\_blank">15064416</a>, PubMed:<a href="http://www.uniprot.org/citations/15616588" target="\_blank">15616588</a>, PubMed:<a href="http://www.uniprot.org/citations/15790808" target="\_blank">15790808</a>, PubMed:<a href="http://www.uniprot.org/citations/16622404" target="\_blank">16622404</a>, PubMed:<a href="http://www.uniprot.org/citations/22464731" target="\_blank">22464731</a>, PubMed:<a href="http://www.uniprot.org/citations/30952868" target="\_blank">30952868</a>, PubMed:<a href="http://www.uniprot.org/citations/35076389" target="\_blank">35076389</a>). Mediates the recruitment of phosphorylated RBBP8/CtIP to DSBs, leading to cooperation between the MRN complex and RBBP8/CtIP to initiate end resection (PubMed:<a href="http://www.uniprot.org/citations/19759395" target="\_blank">19759395</a>, PubMed:<a href="http://www.uniprot.org/citations/27814491" target="\_blank">27814491</a>, PubMed:<a href="http://www.uniprot.org/citations/27889449" target="\_blank">27889449</a>, PubMed:<a href="http://www.uniprot.org/citations/33836577" target="\_blank">33836577</a>). RBBP8/CtIP specifically promotes the endonuclease activity of the MRN complex to clear DNA ends containing protein adducts (PubMed:<a href="http://www.uniprot.org/citations/27814491" target="\_blank">27814491</a>)

target="\_blank">27814491</a>, PubMed:<a href="http://www.uniprot.org/citations/27889449" target="\_blank">27889449</a>, PubMed:<a href="http://www.uniprot.org/citations/30787182" target="\_blank">30787182</a>, PubMed:<a href="http://www.uniprot.org/citations/33836577" target="\_blank">33836577</a>). The MRN complex is also required for the processing of R-loops (PubMed:<a href="http://www.uniprot.org/citations/31537797" target="\_blank">31537797</a>). 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:<a href="http://www.uniprot.org/citations/10888888" target="\_blank">10888888</a>, PubMed:<a href="http://www.uniprot.org/citations/28216226" target="\_blank">28216226</a>). 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:<a href="http://www.uniprot.org/citations/28216226" target="\_blank">28216226</a>). Enhances AKT1 phosphorylation possibly by association with the mTORC2 complex (PubMed:<a href="http://www.uniprot.org/citations/23762398" target="\_blank">23762398</a>).

### 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).

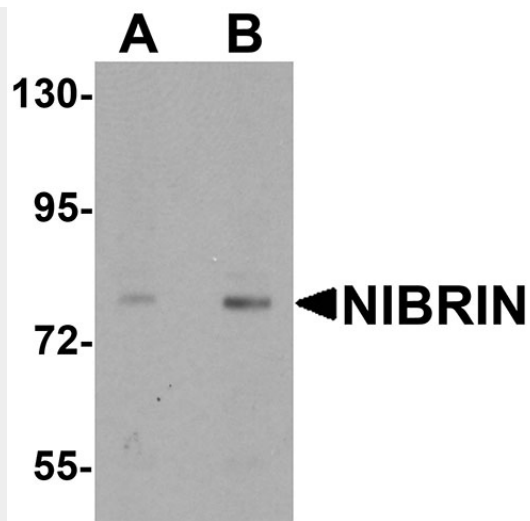
### NIBRIN Antibody - Protocols

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

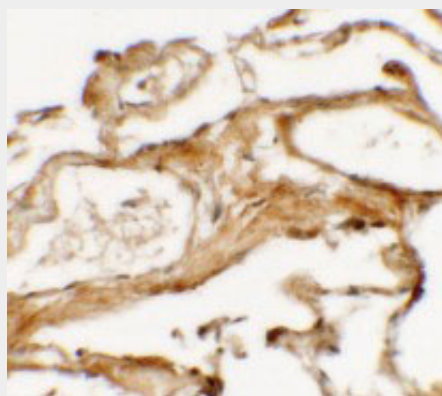
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

### NIBRIN Antibody - Images

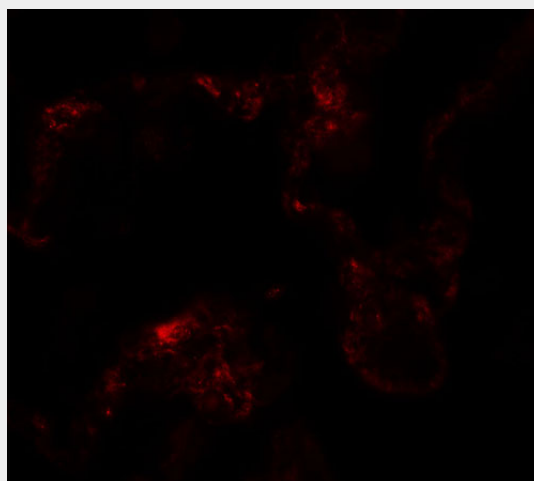




Western blot analysis of NIBRIN in rat lung tissue lysate with NIBRIN antibody at (A) 1 and (B) 2  $\mu\text{g/mL}$ .



Immunohistochemistry of NIBRIN (NT) in human lung tissue with NIBRIN (NT) antibody at 2.5  $\mu\text{g/mL}$ .



Immunofluorescence of NIBRIN in human lung tissue with NIBRIN antibody at 20  $\mu\text{g/mL}$ .

#### **NIBRIN Antibody - Background**

NIBRIN Antibody: NIBRIN (NBN) is a member of the double-strand break repair complex MRE11/RAD50/NBN (MRN) which is involved in DNA double-strand break repair, DNA

damage-induced checkpoint activation and plays a critical role in the maintenance of chromosome integrity. NIBRIN contains two modules found in cell cycle checkpoint proteins, a forkhead-associated domain adjacent to a breast cancer carboxy-terminal domain. Mutations in this gene are associated with Nijmegen breakage syndrome and maybe the cause of cancer predisposition and aplastic anemia.

### **NIBRIN Antibody - References**

Carney JP, Maser RS, Olivares H, et al. The hMre11/hRad50 protein complex and Nijmegen breakage syndrome: linkage of double-strand break repair to the cellular DNA damage response. *Cell* 1998; 93:477-86

Marcelain K, De La Torre C, Gonzalez P, et al. Roles of nibrin and AtM/ATR kinases on the G2 checkpoint under endogenous or radio-induced DNA damage. *Biol. Res.* 2005; 38:179-85.

Varon R, Vissinga C, Platzer M, et al. Nibrin, a novel DNA double-strand break repair protein, is mutated in Nijmegen breakage syndrome. *Cell* 1998; 93:467-76.

Heikkinen K, Karppinen SM, Soini Y. et al. Mutation screening of Mre11 complex genes: indication of RAD50 involvement in breast and ovarian cancer susceptibility. *J. Med. Genet.* 2003; 40:E131.