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# MRE11 Antibody

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP51361

## Product Information

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|---|---|
| **Application** | WB |
| **Primary Accession** | P49959 |
| **Reactivity** | Human, Mouse, Rat |
| **Host** | Rabbit |
| **Clonality** | Polyclonal |
| **Calculated MW** | 80593 |

## Additional Information

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| **Gene ID** | 4361 |
| **Other Names** | Double-strand break repair protein MRE11A, Meiotic recombination 11 homolog 1, MRE11 homolog 1, Meiotic recombination 11 homolog A, MRE11 homolog A, MRE11A, HNGS1, MRE11 |
| **Target/Specificity** | KLH conjugated synthetic peptide derived from human MRE11 |
| **Dilution** | WB~~ 1:1000 |
| **Format** | 0.01M PBS, pH 7.2, 0.09% (W/V) Sodium azide, Glycerol 50% |
| **Storage** | Store at -20 °C.Stable for 12 months from date of receipt |

## Protein Information

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|---|---|
| **Name** | MRE11 {ECO:0000303\|PubMed:8530104, ECO:0000312\|HGNC:HGNC:7230} |
| **Function** | Core 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:11741547, PubMed:14657032, PubMed:22078559, PubMed:23080121, PubMed:24316220, PubMed:26240375, PubMed:27889449, PubMed:28867292, PubMed:29670289, PubMed:30464262, PubMed:30612738, PubMed:31353207, PubMed:37696958, PubMed:38128537, PubMed:9590181, PubMed:9651580, 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:24316220, PubMed:28867292, PubMed:31353207, PubMed:38128537). 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:24316220, |

PubMed:27889449, PubMed:28867292, PubMed:36050397, PubMed:38128537). Within the MRN complex, MRE11 possesses both single-strand endonuclease activity and double-strand- specific 3'-5' exonuclease activity (PubMed:11741547, PubMed:22078559, PubMed:24316220, PubMed:26240375, PubMed:27889449, PubMed:29670289, PubMed:31353207, PubMed:36563124, PubMed:9590181, PubMed:9651580, PubMed:9705271). After DSBs, MRE11 is loaded onto DSBs sites and cleaves DNA by cooperating with RBBP8/CtIP to initiate end resection (PubMed:27814491, PubMed:27889449, PubMed:30787182). MRE11 first endonucleolytically cleaves the 5' strand at DNA DSB ends to prevent non-homologous end joining (NHEJ) and licence HR (PubMed:24316220). It then generates a single-stranded DNA gap via 3' to 5' exonucleolytic degradation to create entry sites for EXO1- and DNA2-mediated 5' to 3' long-range resection, which is required for single-strand invasion and recombination (PubMed:24316220, PubMed:28867292). RBBP8/CtIP specifically promotes the endonuclease activity of MRE11 to clear protein-DNA adducts and generate clean double-strand break ends (PubMed:27814491, PubMed:27889449, PubMed:30787182). MRE11 endonuclease activity is also enhanced by AGER/RAGE (By similarity). The MRN complex is also required for DNA damage signaling via activation of the ATM and ATR kinases: the nuclease activity of MRE11 is not required to activate ATM and ATR (PubMed:14657032, PubMed:15064416, PubMed:15790808, PubMed:16622404). The MRN complex is also required for the processing of R-loops (PubMed:31537797). The MRN complex is involved in the activation of the cGAS-STING pathway induced by DNA damage during tumorigenesis: the MRN complex acts by displacing CGAS from nucleosome sequestration, thereby activating it (By similarity). In telomeres the MRN complex may modulate t-loop formation (PubMed:10888888).

**Cellular Location** Nucleus. Chromosome. Chromosome, telomere Note=Localizes to DNA double-strand breaks (DSBs)

## Background

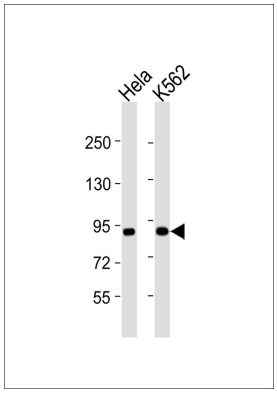
Component of the MRN complex, which plays a central role in double-strand break (DSB) repair, DNA recombination, maintenance of telomere integrity and meiosis. The complex possesses single-strand endonuclease activity and double-strand- specific 3'-5' exonuclease activity, which are provided by MRE11A. RAD50 may be required to bind DNA ends and hold them in close proximity. This could facilitate searches for short or long regions of sequence homology in the recombining DNA templates, and may also stimulate the activity of DNA ligases and/or restrict the nuclease activity of MRE11A to prevent nucleolytic degradation past a given point. The complex may also be required for DNA damage signaling via activation of the ATM kinase. In telomeres the MRN complex may modulate t-loop formation.

## References

Petrini J.H.J.,et al.Genomics 29:80-86(1995).
Petrini J.H.J.,et al.Submitted (NOV-1998) to the EMBL/GenBank/DDBJ databases.
Chamankhah M.,et al.Submitted (SEP-1997) to the EMBL/GenBank/DDBJ databases.
Paull T.T.,et al.Mol. Cell 1:969-979(1998).
Pitts S.A.,et al.Hum. Mol. Genet. 10:1155-1162(2001).

## Images

All lanes : Anti-MRE11 Antibody at 1:1000 dilution Lane 1: Hela whole cell lysates Lane 2: K562 whole cell lysates




Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L),Peroxidase conjugated at 1/10000 dilution Predicted band size : 81 kDa Blocking/Dilution buffer: 5% NFDM/TBST.