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Mre11 Antibody (Center K475) Blocking Peptide

Synthetic peptide
Catalog # BP6656c

Specification

Mre11 Antibody (Center K475) Blocking Peptide - Product Information

Primary Accession P49959

Mre11 Antibody (Center K475) Blocking Peptide - Additional Information

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
The synthetic peptide sequence used to generate the antibody AP6656c was selected from the Center region of human Mre11. A 10 to 100 fold molar excess to antibody is recommended. Precise conditions should be optimized for a particular assay.

Format
Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions
This product is for research use only. Not for use in diagnostic or therapeutic procedures.

Mre11 Antibody (Center K475) Blocking Peptide - Protein Information

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:<a

href="http://www.uniprot.org/citations/30464262" target="_blank">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:<a

href="http://www.uniprot.org/citations/16622404" target="_blank">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)

Mre11 Antibody (Center K475) Blocking Peptide - Protocols

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

- Blocking Peptides

Mre11 Antibody (Center K475) Blocking Peptide - Images

Mre11 Antibody (Center K475) Blocking Peptide - Background

MRE11 is a nuclear protein involved in homologous recombination, telomere length maintenance, and DNA double-strand break repair. By itself, the protein has 3' to 5' exonuclease activity and endonuclease activity. The protein forms a complex with the RAD50 homolog; this complex is required for nonhomologous joining of DNA ends and possesses increased single-stranded DNA endonuclease and 3' to 5' exonuclease activities. In conjunction with a DNA ligase, this protein promotes the joining of noncomplementary ends in vitro using short homologies near the ends of the DNA fragments.

Mre11 Antibody (Center K475) Blocking Peptide - References

Roques,C., EMBO J. 28 (16), 2400-2413 (2009)