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RAD50 Antibody
Purified Mouse Monoclonal Antibody
Catalog # AO2232a

Specification

RAD50 Antibody - Product Information

Application	**WB, E**
Primary Accession	Q92878
Reactivity	**Human**
Host	**Mouse**
Clonality	**Monoclonal**
Isotype	**IgG1**
Calculated MW	**154kDa KDa**

Description
The protein encoded by this gene is highly similar to Saccharomyces cerevisiae Rad50, a protein involved in DNA double-strand break repair. This protein forms a complex with MRE11 and NBS1. The protein complex binds to DNA and displays numerous enzymatic activities that are required for nonhomologous joining of DNA ends. This protein, cooperating with its partners, is important for DNA double-strand break repair, cell cycle checkpoint activation, telomere maintenance, and meiotic recombination. Knockout studies of the mouse homolog suggest this gene is essential for cell growth and viability. Mutations in this gene are the cause of Nijmegen breakage syndrome-like disorder.

Immunogen
Purified recombinant fragment of human RAD50 (AA: 228-359) expressed in E. Coli.

Formulation
Purified antibody in PBS with 0.05% sodium azide

RAD50 Antibody - Additional Information

Gene ID 10111

Other Names
DNA repair protein RAD50, hRAD50, 3.6.-.-, RAD50

Dilution
WB~~1/500 - 1/2000
E~~1/10000

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions
RAD50 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

RAD50 Antibody - Protein Information

Name RAD50 {ECO:0000303|PubMed:8756642, ECO:0000312|HGNC:HGNC:9816}

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:15064416, PubMed:21757780, PubMed:27889449, PubMed:28134932, PubMed:28867292, 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:15064416, PubMed:21757780, PubMed:27889449, PubMed:28867292, PubMed:9590181, PubMed:9651580, 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:15064416, PubMed:27889449, PubMed:28867292, PubMed:9590181, PubMed:9651580, 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:11741547, PubMed:9590181, PubMed:9651580, PubMed:9705271). Within the complex, RAD50 is both required to bind DNA ends and hold them in close proximity and regulate the activity of MRE11 (PubMed:11741547, PubMed:12805565, PubMed:28134932). RAD50 provides an ATP-dependent control of MRE11 by positioning DNA ends into the MRE11 active site: ATP-binding induces a large structural change from an open form with accessible MRE11 nuclease sites into a closed form (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:15064416, PubMed:15790808, PubMed:16622404). The MRN complex is also required for the processing of R-loops (PubMed:31537797). In telomeres the MRN complex may modulate t-loop formation (PubMed:10888888).

Cellular Location

Nucleus. Chromosome, telomere. Chromosome Note=Localizes to discrete nuclear foci after treatment with genotoxic agents (PubMed:10783165, PubMed:26215093). Localizes to DNA double- strand breaks (DSBs) (PubMed:15916964, PubMed:21757780)

Tissue Location
Expressed at very low level in most tissues, except in testis where it is expressed at higher level. Expressed in fibroblasts.

RAD50 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 Cytomety
- Cell Culture