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KD-Validated Anti-RAD50 Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI1395

Product Information

Application	WB, FC, ICC
Primary Accession	Q92878
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Isotype	Rabbit IgG
Clone Names	23GB4115
Calculated MW	153892
Gene Name	RAD50
Aliases	RAD50; RAD50 Double Strand Break Repair Protein; RAD50 Homolog, Double Strand Break Repair Protein; DNA Repair Protein RAD50; RAD50-2; HRad50; HRAD50; RAD50 (S. Cerevisiae) Homolog; RAD50 Homolog (S. Cerevisiae); EC 3.6.3.27; EC 3.6.1.15; EC 3.6.-.-; EC 3.6.3; RAD502; NBSLD
Immunogen	A synthesized peptide derived from human Rad50

Additional Information

Gene ID	10111
Other Names	DNA repair protein RAD50, hRAD50, 3.6.-.-, RAD50 {ECO:0000303|PubMed:8756642, ECO:0000312|HGNC:HGNC:9816}

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.

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