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RAD51 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AW5075

Product Information

Application	WB
Primary Accession	Q06609
Reactivity	Human, Mouse, Rat
Host	Mouse
Clonality	Monoclonal
Calculated MW	36966
Isotype	IgG1,κ
Antigen Source	HUMAN

Additional Information

Gene ID	5888
Other Names	DNA repair protein RAD51 homolog 1, HsRAD51, hRAD51, RAD51 homolog A, RAD51, RAD51A, RECA
Dilution	WB~~1:1000
Target/Specificity	This RAD51 antibody is generated from a mouse immunized with a recombination protein from human.
Format	Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	RAD51 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	RAD51 {ECO:0000303|PubMed:8358431, ECO:0000312|HGNC:HGNC:9817}
Function	Homologous DNA recombinase that catalyzes strand exchange, a key step in DNA repair through homologous recombination (HR) (PubMed:12205100, PubMed:12442171, PubMed:15937124, PubMed:17515904, PubMed:17515903, PubMed:18417535, PubMed:19303847, PubMed:20231364, PubMed:20348101, PubMed:22325354, PubMed:23509288, PubMed:23754376, PubMed:24141787,

PubMed:26681308, PubMed:27941124, PubMed:28575658, PubMed:32640219, PubMed:37499663, PubMed:38509361, PubMed:7988572). Binds to single-stranded DNA (ssDNA) in an ATP-dependent manner to form nucleoprotein filaments which are essential for the homology search and strand exchange (PubMed:12205100, PubMed:15937124, PubMed:17515904, PubMed:17515903, PubMed:18417535, PubMed:19303847, PubMed:15226506, PubMed:20231364, PubMed:20348101, PubMed:23509288, PubMed:23754376, PubMed:26681308, PubMed:28575658, PubMed:37499663, PubMed:39636933, PubMed:41166468, PubMed:38509361, PubMed:7988572). Catalyzes the recognition of homology and strand exchange between homologous DNA partners to form a joint molecule between a processed DNA break and the repair template (PubMed:12205100, PubMed:18417535, PubMed:19303847, PubMed:20231364, PubMed:20348101, PubMed:23509288, PubMed:23754376, PubMed:26681308, PubMed:28575658, PubMed:38459011). RAD51 targeting to ssDNA promotes removal of replication protein-A (RPA) from ssDNA and stabilization of RAD51-ssDNA filaments by blocking ATP hydrolysis (PubMed:20729859). Nucleosomal DNA is peeled from the histone surface by the RAD51 filament (PubMed:38509361). Recruited to resolve stalled replication forks during replication stress (PubMed:27797818, PubMed:31844045). Also required for homologous recombination during meiosis by acting as an non-catalytic accessory factor for DMC1 recombinase, enabling proper chromosome pairing and crossing over (By similarity). Plays a role in regulating mitochondrial DNA copy number under conditions of oxidative stress in the presence of RAD51C and XRCC3 (PubMed:20413593). Also involved in interstrand cross-link repair (PubMed:26253028).

Cellular Location

Chromosome. Nucleus. Cytoplasm. Cytoplasm, perinuclear region. Mitochondrion matrix. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome Note=Colocalizes with RAD51AP1 and RPA2 to multiple nuclear foci upon induction of DNA damage (PubMed:20154705). DNA damage induces an increase in nuclear levels (PubMed:20154705). Together with FIGNL1, redistributed in discrete nuclear DNA damage-induced foci after ionizing radiation (IR) or camptothecin (CPT) treatment (PubMed:23754376). Accumulated at sites of DNA damage in a SPIDR- dependent manner (PubMed:23509288). Recruited at sites of DNA damage in a MCM9-MCM8-dependent manner (PubMed:23401855). Recruited at sites of DNA damage following interaction with TOPBP1 in S-phase (PubMed:26811421). Colocalizes with ERCC5/XPG to nuclear foci in S phase (PubMed:26833090). Recruited to stalled replication forks during replication stress by the TONSL-MMS22L complex, as well as ATAD5 and WDR48 in an ATR-dependent manner (PubMed:27797818, PubMed:31844045). In germ cells, during meiotic prcess, binds single-stranded DNA (ssDNA) away from the break site (By similarity) {ECO:0000250|UniProtKB:Q08297, ECO:0000269|PubMed:20154705, ECO:0000269|PubMed:23401855, ECO:0000269|PubMed:23509288, ECO:0000269|PubMed:23754376, ECO:0000269|PubMed:26811421, ECO:0000269|PubMed:26833090, ECO:0000269|PubMed:27797818, ECO:0000269|PubMed:31844045}

Tissue Location

Highly expressed in testis and thymus, followed by small intestine, placenta, colon, pancreas and ovary (PubMed:18417535) Weakly expressed in breast (PubMed:18417535)

Background

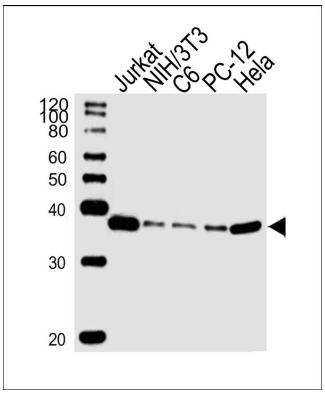
Participates in a common DNA damage response pathway associated with the activation of homologous recombination and double-strand break repair. Binds to single and double-stranded DNA and exhibits

DNA-dependent ATPase activity. Underwinds duplex DNA and forms helical nucleoprotein filaments. Plays a role in regulating mitochondrial DNA copy number under conditions of oxidative stress in the presence of RAD51C and XRCC3.

References

Shinohara A.,et al.Nat. Genet. 4:239-243(1993).
Yoshimura Y.,et al.Nucleic Acids Res. 21:1665-1665(1993).
Schmutte C.,et al.Cancer Res. 59:4564-4569(1999).
Wang W.W.,et al.Cancer Epidemiol. Biomarkers Prev. 10:955-960(2001).
Park J.Y.,et al.Nucleic Acids Res. 36:3226-3234(2008).

Images



Western blot analysis of lysates from Jurkat,mouse NIH/3T3,rat C6,rat PC-12,Hela cell line (from left to right), using RAD51 Antibody(Cat. #AW5075). AW5075 was diluted at 1:1000 at each lane. A goat anti-mouse IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.